



Air Division 1, rr <airdivision1@deq.virginia.gov>

Re: Buckingham compressor air comments...

1 message

Larysa Dyrszka <lar917dy@gmail.com>

Tue, Sep 18, 2018 at 6:33 PM

To: airdivision1@deq.virginia.gov, patrick.corbett@deq.virginia.gov

Adding my address for correspondence:

Larysa Dyrszka MD
PO Box 355
124 Chapin Trail
White Lake, NY 12786

On Tue, Sep 18, 2018 at 6:21 PM Larysa Dyrszka <lar917dy@gmail.com> wrote:

Mr Corbett,
Thank you for calling this to my attention. Hopefully this pdf can be opened.
Kind regards,
Larysa Dyrszka

845-583-4381 home
201-615-9889 cell

On Tue, Sep 18, 2018 at 1:56 PM Air Division 1, rr <airdivision1@deq.virginia.gov> wrote:

The file containing the comments cannot be opened. Can you please re-attach the file to the email, not link it to Google Docs? The March 2018 Compendium from PSR worked fine and does not need to be resent.

Thank you.

On Mon, Sep 10, 2018 at 2:39 AM, Larysa Dyrszka <lar917dy@gmail.com> wrote:

 compendium-5.pdf Dyrszka ACP Buckingham compressor...

Kindly accept the attached comments.
Larysa Dyrszka

**Comments regarding the air quality permit from the VDEQ State Air Pollution Control Board for an
Atlantic Coast Pipeline Compressor Station**

Larysa Dyrszka, MD

August 28, 2018

Shale gas development has the potential to cause adverse health impacts.¹ But due to a set of exemptions this industry received from key federal public health laws², these health issues have only recently begun to come to light.³

Reports of ill health in impacted people became evident over recent years, despite the lack of involvement from federal and state public health and environmental departments. Lists were generated by activists (List of the Harmed)⁴ and surveys compiled (Earthworks' Survey of Health Impacts)⁵. A Health Impact Assessment⁶ started in Battlement Mesa Colorado showed that air pollution was a stressor and particularly significant. And there is still no mechanism in place to monitor or track the health and environmental impacts from gas drilling operations, including the economic costs.

In 2012 Congress commissioned a report⁷ which found that accidents happen and violations occur in this industry frequently, and even the best regulations have not prevented environmental disasters.

Physicians, Scientists and Engineers for Healthy Energy published an analysis of the peer-reviewed literature in 2015. Their results, as of 2015, indicated that at least 685 papers have been published in peer-reviewed scientific journals that are relevant to assessing the impacts of unconventional natural gas development (UNGD). 84% of public health studies contain findings that indicate public health hazards, elevated risks, or adverse health outcomes; 69% of water quality studies contain findings that indicate potential, positive association, or actual incidence of water contamination; and 87% of air quality studies contain findings that indicate elevated air pollutant emissions and/or atmospheric concentrations.^{8 9} There are, as of today, 1565 peer-reviewed studies on fracking in the PSE for Healthy Energy ROGER database.¹⁰

¹ Shonkoff et al. April 2014. Environmental Public Health Dimensions of Shale and Tight Gas Development. EnvHealthPerspectives. Access at: <http://dx.doi.org/10.1289/ehp.1307866>

² <http://www.ewg.org/research/free-pass-oil-and-gas/oil-and-gas-industry-exemptions>

³ Rabinowitz et al. Sept 2014. Proximity to Natural Gas Wells and Reported Health Status: Results of a Household Survey in Washington County, Pennsylvania. EHP. Access at: <http://dx.doi.org/10.1289/ehp.1307732>

⁴ <http://pennsylvaniaallianceforcleanwaterandair.wordpress.com/the-list/>

⁵ Steinzor, N, et al., Investigating Links Between Shale Gas Impacts and Health through a Community Survey Project in Pennsylvania, New Solutions, Vol. 23(1) 55-83 (May 2013). Access at: <http://www.earthworksaction.org/files/publications/SteinzorSubraSumiShaleGasHealthImpacts2013.pdf>

⁶ Witter R, et al, Battlement Mesa HIA 2011 <http://www.garfield-county.com/environmental-health/battlement-mesa-health-impact-assessment-draft2.aspx>

⁷ http://democrats.naturalresources.house.gov/sites/democrats.naturalresources.house.gov/files/2012-02-08_RPT_DrillingDysfunction.pdf

⁸ <http://journals.plos.org/plosone/article?id=10.1371/journal.pone.0154164>

⁹ <https://www.psehealthyenergy.org/our-work/publications/archive/the-science-on-shale-gas-development/>

¹⁰ <https://www.psehealthyenergy.org/our-work/shale-gas-research-library/>

Concerned Health Professionals of New York just completed the fifth edition of a compendium on the risks and health impacts of fracking.¹¹ The Compendium of Scientific, Medical, and Media Findings Demonstrating Risks and Harms of Fracking (the Compendium) is a fully referenced compilation of the evidence outlining the risks and harms of fracking. It is a public, open-access document that is housed on the websites of Concerned Health Professionals of New York (www.concernedhealthny.org) and Physicians for Social Responsibility (www.psr.org). For this fifth edition of the Compendium, as before, we collected and compiled findings from three sources: articles from peer-reviewed medical or scientific journals; investigative reports by journalists; and reports from or commissioned by government agencies. Peer-reviewed articles were identified through databases such as PubMed and Web of Science, and from within the PSE Healthy Energy database. The studies and investigations referenced in the dated entries catalogued in Compilation of Studies & Findings are current through December 2017.

Two years ago NY State DOH Commissioner, Dr Zucker, advised Governor Cuomo not to approve high volume hydraulic fracturing in NY because of the potential health risks, and he based it on the science.¹² The State of Maryland permanently banned fracking after 2 years of study, based on the potential for adverse public health and environmental impacts.¹³ The EPA HF study has been completed, having only studied water, and shows that water has, in fact, been contaminated.¹⁴

Most importantly, there are many people who have already been impacted in states where gas extraction using high volume hydraulic fracturing is permitted. We posit that a careful study of the scientific information is fundamental to making informed decisions. As we review the studies already completed, and speak with impacted people, we are increasingly aware that fracking and its infrastructure causes stressors on health that cannot be mitigated.

Compressor stations are known to emit carcinogens and other organ system irritants; this is documented in a study by Russo and Carpenter.¹⁵ It has been recommended that a Health Impact Assessment be done prior to permitting compressor stations. The Shale Health Impact Assessment (HIA) Template is designed to give a structured way to bring together data on the community potentially impacted, the expected emissions from shale gas or oil development, and the potential health risks posed to residents in the immediate area. This tool can provide decision-makers with a comprehensive perspective on the siting, expanding, or maintaining of a shale gas or oil compressor station.¹⁶

Recent studies in the field in NY State demonstrate that negative health effects have impacted residents in those communities. Unfortunately, no HIA was done prior to permitting. The studies include Summary

¹¹ <http://concernedhealthny.org/compendium/>

¹² http://www.health.ny.gov/press/reports/docs/high_volume_hydraulic_fracturing.pdf

¹³ <http://thinkprogress.org/climate/2015/05/29/3664098/larry-hogan-maryland-fracking-ban/>

¹⁴ <https://www.epa.gov/hfstudy>

¹⁵ Russo, PN, Carpenter, DO. Health Effects Associated with Stack Chemical Emissions from NYS Natural Gas Compressor Stations: 2008-2014. October 12, 2017. https://www.albany.edu/about/assets/Complete_report.pdf

¹⁶ <https://www.environmentalhealthproject.org/>

For these reasons (and with more detail provided below) fracking and the associated infrastructure such as compressor stations must be carefully studied and all the risks quantitatively assessed prior to proceeding with any permits.

1) There are concerns about the adequacy and quality of the air modeling study.

Local topography and weather patterns are usually not taken into account in the AEROMOD program. It is recommended to use results with localized data input.

Records of peak emissions which are a primary source of concern for human health are not represented.

2) Health risks from relevant air contaminants receive inadequate treatment.

Averages, peaks and health events

A “tons per year” measurement associated with the assessment of risk to the public’s health near a compressor station is an archaic method, and does not address exposure adequately. Also, the National Ambient Air Quality Standards (NAAQS) used as a benchmark for air quality were not created to assess the air quality and safety in a small geographic area with fluctuating emissions. NAAQS effectively address regional air quality concerns. But these standards do not adequately assess risk to human health for residents living in close proximity to polluting sources such as compressor station sites, where emissions can be highly variable.

Generally, it has been shown that:

- Current protocols used for assessing compliance with ambient air standards do not adequately determine the intensity, frequency or durations of the actual human exposures to the mixtures of toxic materials released regularly at UNGD sites, including compressor stations.
- The typically used periodic 24-hour average measures can underestimate actual exposures by an order of magnitude. There remains the risk of serious harm to human health, including lung disease.
- Reference standards are set in a form that inaccurately determines health risk because they do not fully consider the potential synergistic combinations of toxic air emissions. Thus estimates of yearly totals of contaminants released by a compressor station do not allow for an assessment of the physiological impact of those emissions on individuals. NAAQS reflects what, over a region, over time, is deemed safe population-wide. This is very different than what is safe within for instance 1200 feet of this compressor station. Averaging over a year can wash out important higher spikes in emissions (thus exposures) that may occur at various points throughout the

¹⁷ <https://www.environmentalhealthproject.org/researchers/resources>

year. What is needed is continuous, minute by minute data on a suite of surrogate compounds being emitted.

Researchers have demonstrated the wisdom of looking at peak exposures as compared to averages over longer periods of time. Darrow et al (2011) write that sometimes peak exposures better capture relevant biological processes. This is the case for health effects that are triggered by short-term, high doses. They write, "Temporal metrics that reflect peak pollution levels (e.g., 1-hour maximum) may be the most biologically relevant if the health effect is triggered by a high, short-term dose rather than a steady dose throughout the day. Peak concentrations ... are frequently associated with episodic, local emission events, resulting in spatially heterogeneous concentrations...."¹⁸ Delfino et al (2002) posited that maxima of hourly data, not 24-hour averages, better captured the risks to asthmatic children, stating, "it is expected that biologic responses may intensify with high peak excursions that overwhelm lung defense mechanisms."¹⁹ Additionally, they suggest that "[o]ne-hour peaks may be more influenced by local point sources near the monitoring station that are not representative of regional exposures...."²⁰

A specific example:

An EPA ATSDR report on air emissions from the Brigich compressor station in PA (2016) calculated detailed non-cancer and cancer risk evaluations that included excess lifetime cancer risk calculations for a subset of the constituents of potential concern. ATSDR concluded that, in general, these more detailed non-cancer and cancer exposure evaluations did not support the likelihood of human health harm from these air pollutants, although ATSDR could not rule out that some sensitive subpopulations may experience health impacts from hydrogen sulfide, PM_{2.5} or carbonyls.²¹

Hydrogen sulfide was monitored continuously, documenting the variability of potential exposures, along with the average. Spikes of H₂S were quite high. EHP has similar finding from measurements of PM_{2.5} near compressor stations.

ATSDR has established that there were levels of exposure around the compressor station that raise health concerns. In particular, acetaldehyde, benzene, formaldehyde, carbon tetrachloride, chloroform, 1,2-DCA and 1,1,2-trichloroethane, crotonaldehyde, and 1-methoxy-2-propanone exceeded their respective comparison values (CVs).

¹⁸ Darrow LA, Klein M, Sarnat JA, Mulholland, Strickland MJ, Sarnat SE, Russell A, Tolbert PE. The use of alternative pollutant metrics in time-series studies of ambient air pollution and respiratory emergency department visits. *Journal of Exposure Science and Environmental Epidemiology*. 2011;12 (1): 10-19.

¹⁹ Wolf Eagle Environmental. Town of DISH, Texas Ambient Air Monitoring Analysis Final Report. September 15, 2009.

²⁰ Delfino R, Zeiger RS, Seltzer JM, Street DH, McLaren CE. Association of asthma symptoms with peak particulate air pollution and effect modification by anti-inflammatory medication use. *Environmental Health Perspectives*. 2002; 110(10):A607-A617.

²¹ ATSDR Health Consultation Exposure Investigation Natural Gas Ambient Air Quality Monitoring Initiative, Brigich Compressor Station Chartiers Township, Washington County, Pennsylvania. Access at [https://www.atsdr.cdc.gov/HAC/pha/Brigich Compressor Station/Brigich Compressor Station EI HC 01-29-2016 508.pdf](https://www.atsdr.cdc.gov/HAC/pha/Brigich%20Compressor%20Station/Brigich%20Compressor%20Station%20EI%20HC%2001-29-2016%20508.pdf)

SWPA EHP has prepared technical reports in response to the ATSDR reports on the Brigich and Brooklyn compressor stations, and they are available on the SWPA EHP website.²²

- At the proposed compressor station, like other industrial facilities, multiple exposures will be occurring simultaneously or in close time frames. The consultants have not calculated cancer risk on an individual chemical basis. It is known that there are combinations of chemicals that increase the cancer risk several fold. This occurs, for instance, when PM2.5 is present in the air with carcinogens. The PM2.5 can increase a dose several fold by bringing other compounds into the deep lung with the fine particulates. To the extent that chemicals have not just additive but synergistic effects, those effects should be accounted for.
- Mixtures and sequential exposures

Mixtures of pollutants are a critically important topic in addressing the public health implications of UNGD broadly and compressor stations in this case. In fact, a very large number of chemicals are released together. Medical reference values are not able to take the complex nature of the shale environment, its multiple emissions and interactions into full consideration.²³ Chemicals that reach the body interfere with metabolism and the uptake and release of other chemicals. Some chemicals attack the same or similar target sites creating an additive effect. This is the case with chemicals of similar structure such as many in the class of VOCs. Some mixtures like PM and VOC act synergistically to increase the toxicity of the chemicals. Other chemicals released environmentally are rapidly absorbed and slowly excreted. These slowly excreted chemicals will interfere with subsequent actions of chemicals because the body has not yet cleared the effects from the earlier exposure.

The VOCs and HAPs shown in the tables will be emitting air mixtures with high levels of fine particulate matter. Inhaled particulate matter increases transport of the soluble VOCs into the deep lung by a factor of 10 or more. Combination of VOCs with particulates produces a primary synergistic action in air toxicity. Reference values are not determined with particulate matter in the mixtures. Therefore, the URF and the RFCs under represent the inhalation hazard in an atmosphere with high particulate matter.

Similarly, the cancer risk assessment is inadequate. Health Indexes are added when, in fact, there are synergistic effects with multiple chemicals. Thus the results remain inconclusive.

3) The treatment of Particulate Matter (PM) impacts in particular, but also of health impacts from compressors in general, is inadequate.

The air impacts permit application and modeling should address the full range of possible exposures to pipeline ready gas. That includes a human carcinogen, Particulate Matter (PM).

Particulate matter is known to impair lung function, aggravate asthma, cause high blood pressure and heart attack. PM can adhere with other compounds and then can carry these compounds, which may be

²² <http://www.environmentalhealthproject.org/resources/research-factsheets>

²³ For additional information see, for instance, EPA's Integrated Risk Information System Database.

toxic, into the deep lung and this is a health concern near compressor stations where multiple toxins are emitted with PM.

Research by the SWPA-EHP in Minisink, New York, where one of the compressors studied is located, and where the gas is NOT raw field gas, but the same type of gas as traverses through Sullivan County, and presumably will also flow through the Atlantic Coast Pipeline, shows significant human health impacts including respiratory, neurological and dermatological impacts. (see "Summary of Minisink Compressor Station Monitoring Results" at <http://www.environmentalhealthproject.org/researchers/resources>.²⁴ In addition, and of significant concern, is the observation by 24-hour (continuous) SPECK PM monitoring by the researchers, that dangerous spikes of PM occur and that had no correlation at all with Ambient Air Quality monitors located in Newburgh, NY.

*A presentation can be found at the Town of Mamakating NY website. It is also be found as an addendum following these comments.

4) Radioactive waste

The International Atomic Energy Agency²⁵ and the International Commission of Radiation Protection have recommendations regarding radioactivity at oil and gas mining sites, and most countries which are members adhere to the recommendations. The US is a member but has instead exempted from federal oversight through RCRA (Resource Conservation and Recovery Act) the materials that come from down-hole which are, in many cases, radioactive.²⁶ Brown has reviewed the issue of radioactivity in fracking products.²⁷ It is important to note that some radioactive moieties selectively and preferentially travel with the gas product, namely radon. as radon decays within the pipeline, the solid daughter elements, polonium and lead, accumulate along the interior of the pipes. There is a concern that the gas transiting, and being compressed and regulated, will have radioactivity levels which will put at risk not only the workers at these stations and along the pipeline, but potentially also to the residents. Radon, a gas, has a short half-life (3.8 days) but its progeny are lead and polonium, and these are toxic and have relatively long half-lives of 22.6 years and 138 days respectively. This air permit modeling does not address the potential health risks of the radon decay progeny.

Radioactive waste products are typically removed from the pipelines after "pigging". How this toxic waste product is removed, handled, stored, transported and disposed of should be made clear to the public.

²⁴ <http://www.environmentalhealthproject.org/resources/research-factsheets>

²⁵ Recommendations from the International Atomic Energy Agency (IAEA) http://www-pub.iaea.org/MTCD/publications/PDF/TCS-40_web.pdf

²⁶ Federal exemption <http://www.epa.gov/osw/nonhaz/industrial/special/oil/oil-gas.pdf>

²⁷ Brown VJ. 2014. Radionuclides in fracking wastewater: managing a toxic blend. Environ Health Perspect 122:A50-A55; <http://dx.doi.org/10.1289/ehp.122-A50>

EPA region 3 reports that radium, measured as gross alpha and beta, in flowback water and produced waste in Pennsylvania wells, is significantly higher than in other shales.

The graphs found here, from a USGS report, illustrate the high radioactivity in Marcellus shale.²⁸

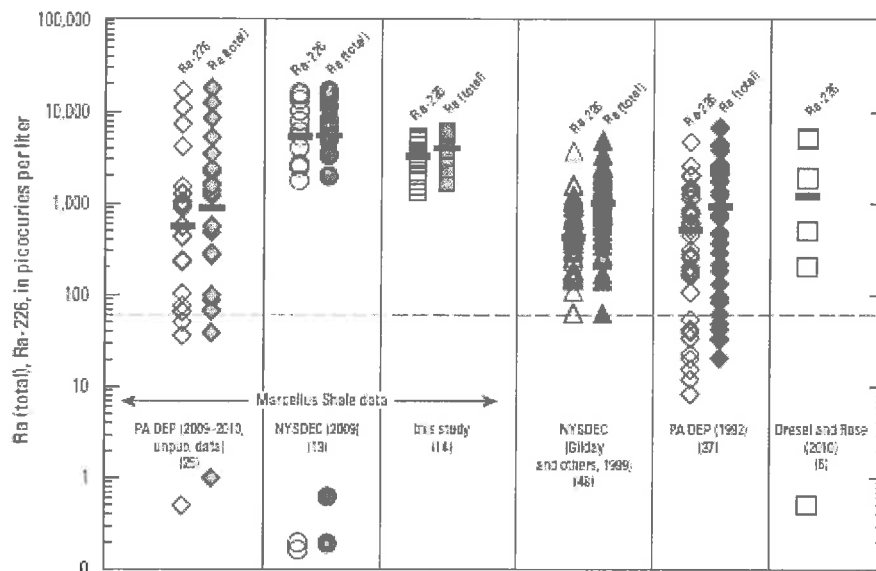


Figure 4. Measured activities for total radium (Ra-226 + Ra-228) and Ra-226 for each of the data sources used in the study. The three datasets for produced water from Marcellus Shale wells are shown on the left; the remaining three datasets are for non-Marcellus Shale wells. The number of points in each dataset is shown in parentheses, and the median values are plotted as heavy black lines. For reference, the dashed line shows the industrial effluent discharge limit (60 pCi/L) for Ra-226 (U.S. Nuclear Regulatory Commission, <http://www.nrc.gov/reading-rm/doc-collections/cfr/part020/appb/Radium-226.html>).

In the 2008 publication of the International Association of Oil & Gas Producers, the authors wrote: “During the production process, NORM flows with the oil, gas and water mixture and accumulates in scale, sludge and scrapings. It can also form a thin film on the interior surfaces of gas processing equipment and vessels. The level of NORM accumulation can vary substantially from one facility to another depending on geological formation, operational and other factors... NORM may accumulate, e.g. at wellheads in the form of scale; at Gas/Oil Separation Plants (GOSP) in the form of sludge; and at gas plants the form of thin films as the result of radon gas decay.

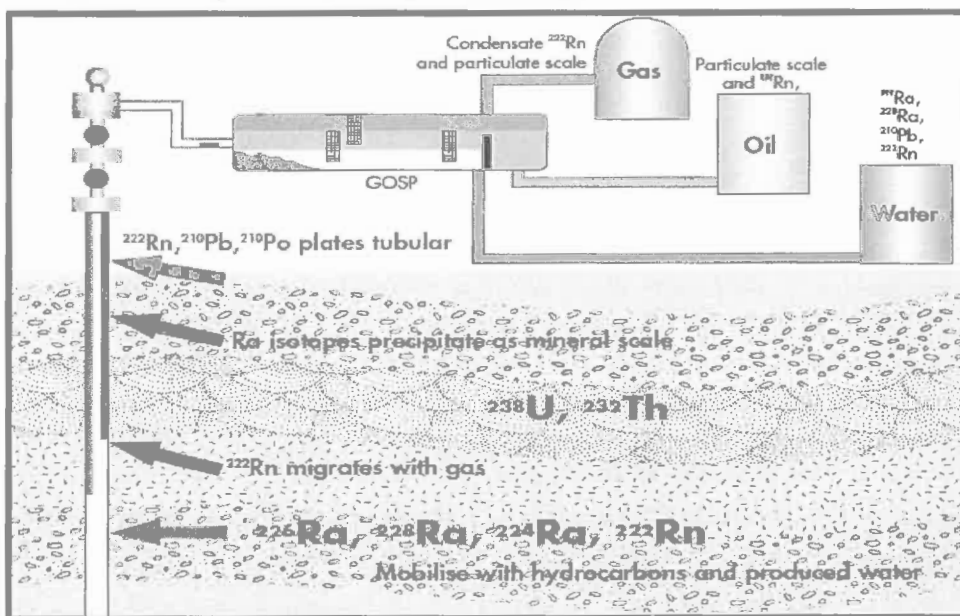
“...radionuclides such as Lead-210 and Polonium-210 can...be found in pipelines scrapings as well as sludge accumulating in tank bottoms, gas/oil separators, dehydration vessels, liquid natural gas (LNG) storage tanks and in waste pits as well as in crude oil pipeline scrapings.”²⁹

This graph from the same publication shows the origins of NORM, as well as where NORM can accumulate.

²⁸ <http://pubs.usgs.gov/sir/2011/5135/pdf/sir2011-5135.pdf>

²⁹ OGP, "Guidelines for the management of Naturally Occurring Radioactive Material (NORM) in the oil & gas industry" International Association of Oil & Gas Producers, Report No. 412, September 2008 <http://www.ogp.org.uk/pubs/412.pdf>

Figure 1.1 The origins of NORM, indicating where NORM may accumulate in the recovery process.



In January 2015, PA DEP released their TENORM report³⁰. The DEP was quick to issue a press memo assuring that “There is Little Potential for Radiation Exposure from Oil and Gas Development”.³¹ Upon careful review of the report and the appendices, it was clear that there were elevated levels of radium and radon which needed to be mitigated; some areas should even be posted as radioactive areas, as per OSHA regulations.³² The report has since undergone changes.

In the PA DEP report, wastewater treatment plants reported the following numbers for liquid waste Ra226:

Figure 4-1. CWT Influent and Effluent Liquid Ra-226 Minimum, Maximum, and Average

| Wastewater Source | Filtered or Not | Min (pCi/L) | Max (pCi/L) | Ave (pCi/L) |
|-------------------|-----------------|-------------|-------------|-------------|
| Effluent | Filtered | 18.0 | 14.900 | 2.100 |
| Effluent | Unfiltered | 42.0 | 15.500 | 1.840 |
| Influent | Filtered | 57.0 | 14.100 | 2.350 |
| Influent | Unfiltered | 17.5 | 13.400 | 1.870 |

It is clear that workers at wastewater treatment plants handling gas waste are being exposed to high radiation doses. “The maximum gamma radiation exposure rate measured was 502 μ rem/hr on contact with the outside of a wastewater tank. Work in proximity of the tank could potentially result in an

³⁰<http://www.dep.pa.gov/Business/Energy/OilandGasPrograms/OilandGasMgmt/Oil-and-Gas-Related-Topics/Pages/Radiation-Protection.aspx>

³¹ <http://files.dep.state.pa.us/OilGas/BOGM/BOGMPortalFiles/RadiationProtection/rls-DEP-TENORM-01xx15AW.pdf>

³² <https://www.osha.gov/SLTC/radiationionizing/standards.html>

exposure of 100 mrem in 200 hours of annual exposure or 10 percent of an employee's 2,000-hour occupational year."³³

The method measuring Radium 226 and 228 and their progeny has recently received scrutiny, and a new set of methods has been developed by the EPA in collaboration with Nelson and Schultz at the University of Iowa³⁴. The FPWHFO (flowback and produced water in hydraulic fracturing operations) matrix is considered to be a particularly challenging one due to its extremely high dissolved solids content and its complexity. This new method addresses that complexity.

In brief, the calculations done using the older EPA methods have likely significantly underestimated the radium content of flowback and produced water. Note that the methods used to detect radium in the USGS report³⁵ and in this recent PA DEP report on radioactivity³⁶ (using EPA methods 900 - 904³⁷) may have underestimated the radium content because of the high salinity in the samples.

The gas which enters the pipeline carries gaseous radon with it; and as radon decays within the pipeline, the solid daughter elements, polonium and lead, accumulate along the interior of the pipes. There is concern that the gas transiting, and being compressed, will have radioactivity levels which will be a risk not only to the workers at these stations and along the pipeline, but potentially also to the residents.

Radon was measured at various locations around POTW plants "...at various indoor locations such as break rooms, labs, offices, etc., ...The results ranged from 0.2 to 8.7 pCi/L."³⁸

Radon has a short half-life (3.8 days) but its decay products, lead and polonium, have relatively long half-lives of 22.6 years and 138 days respectively. Lead causes neurologic and hematologic toxicity, and death; polonium causes cancer and death.³⁹ Radon and its radioactive decay products enter the body primarily through inhalation. Most of the radon is exhaled prior to radioactive decay but some of the solid radioactive polonium and lead remain in the lungs and may cause cancer. "Ninety-nine % of the health effects are caused by radon's daughter products; of most significance are the four short-lived ones, polonium-218 to polonium-214 inclusive, which are referred to as radon daughters, radon progeny, or radon decay products."⁴⁰

Following is a description of the fate of radon in a processing plant; however, similar activities occur at a compressor station. Both compressors and processing plants dot Pennsylvania's landscape. "Radon enters the ... piping where it decays into radioactive particulates that are deposited in the piping. During

³³ http://www.elibrary.dep.state.pa.us/dsweb/Get/Document-105822/PA-DEP-TENORM-Study_Report_Rev_0_01-15-2015.pdf pg 4-8

³⁴ http://www2.epa.gov/sites/production/files/2014-08/documents/epa-600-r-14-107_-_gross_alpha_-_gross_beta_508_km_08-08-2014.pdf

³⁵ <http://pubs.usgs.gov/sir/2011/5135/pdf/sir2011-5135.pdf>

³⁶ http://www.portal.state.pa.us/portal/server.pt/community/oil_gas_related_topics/20349/radiation_protection/986697

³⁷ http://files.dep.state.pa.us/OilGas/BOGM/BOGMPortalFiles/RadiationProtection/Sampling_and_Analysis_Plan-Part-II-Quality_Assurance_Project_Plan.pdf

³⁸ *Ibid* pg 4-3

³⁹ National Academy of Sciences 1988 report: Health Risks of Radon and Other Internally Deposited Alpha-Emitters: BEIR IV, page 5

⁴⁰ http://www.inive.org/medias/ECA/ECA_Report15.pdf pg 9

the working lifetime of a ... plant, radon is constantly entering the system and adding to the level of radioactive progeny. Most radon progeny are short-lived, so when a ... plant ceases operations, the short-lived progeny decay quickly. These short-lived radionuclides are the ones that produce the signature gamma ray spectrum that can be detected easily on the outside of the piping. As the short-lived radon progeny decays, it becomes more and more difficult to detect activity from the outside of pipes and tanks, even though there may be detectable radiation on the inside. As the short half-lived progeny decay away, the only radionuclides remaining are the relatively long-lived ^{210}Pb (T_{1/2} 21 y) and its progeny. ^{210}Pb emits a gamma ray at 47 keV and has a transmission of only about 10% to the minus 7 to 10% to the minus 6 through a schedule-40 pipe. Unless the pipe had an access point, internal contamination might not be detectable from the outside.”⁴¹

During production radon usually follows the gas stream. “Radon-222 produces, through natural decay, several radioactive nuclides (also known as radon progeny). Most radon progeny are short-lived, with the exception of Lead-210 and Polonium-210, which have relatively long half-lives.... Most of the radon decay products (90-99%) are attached to ambient aerosols, airborne particulates or surfaces. This can result in forming thin radioactive films on the inner surfaces of gas processing equipment such as scrubbers, compressors, reflux pumps, control valves and product lines.”⁴²

Activity concentration of ^{222}Rn , ^{210}Pb and ^{210}Po in natural gas (Reference 1)

| Radionuclide | Reported Range [Bq/m ³] |
|-------------------|-------------------------------------|
| ^{222}Rn | 5 – 200,000 |
| ^{210}Pb | 0.005 – 0.02 |
| ^{210}Po | 0.002 – 0.08 |

Activity concentration of ^{210}Pb and ^{210}Po in NGL/hydrocarbon condensate (Reference 1)

| Radionuclide | Reported Range [Bq/l] |
|-----------------------------|-----------------------|
| ^{222}Rn (NGL) | 0.01 – 1,500 |
| ^{222}Rn (C3 -liq) | 0.01 – 4,200 |
| ^{210}Pb | 0.3 – 230 |
| ^{210}Po | 0.3 – 100 |

43

In 2013, samples of natural gas were analyzed for Spectra and submitted to FERC (public record). The results are as follows:

⁴¹ Krieger. 2005. <http://radonattahoe.com/TENORM.pdf>

⁴² OGP. 2006. <http://www.ogp.org.uk/pubs/412.pdf>

⁴³ <http://www.ogp.org.uk/pubs/412.pdf>

Results of Samples for Spectra Energy

| Date | Location | Analyzed ¹ | Rn Conc. (pCi/L) ¹ | MDC (pCi/L) ¹ |
|------------|---------------|-----------------------|----------------------------------|-----------------------------|
| 12/3/2013 | Bechtelsville | 12/4 - 12/5 | 29.9 ± 3.2 | 0.1 |
| | Bechtelsville | 12/11 - 12/12 | 29.4 ± 3.1 | 0.3 |
| 12/3/2013 | Blank | 12/4 - 12/5 | 0.16 ± 0.04 | 0.07 |
| | Blank | 12/11 - 12/12 | 0.19 ± 0.04 | 0.27 |
| 12/12/2013 | Staten Island | 12/13 - 12/14 | 20.6 ± 2.2 | 0.1 |
| | Staten Island | 12/23 - 12/24 | 20.5 ± 2.2 | 0.5 |
| 12/12/2013 | Jersey City | 12/13 - 12/14 | 20.7 ± 2.2 | 0.1 |
| | Jersey City | 12/23 - 12/24 | 20.4 ± 2.2 | 0.5 |
| 12/12/2013 | Blank | 12/27 - 12/28 | -0.16 ± 0.04 | 6.69 |
| | Blank | 12/31 - 1/1/14 | 1.38 ± 0.15 | 12.86 |
| 12/16/2013 | Ramapo | 12/17 - 12/18 | 26.1 ± 2.8 | 0.1 |
| | Ramapo | 12/26 - 12/27 | 26.4 ± 2.8 | 0.4 |
| 12/16/2013 | Mahwah | 12/17 - 12/18 | 23.0 ± 2.5 | 0.1 |
| | Mahwah | 12/17 - 12/18 | 23.3 ± 2.5 | 0.4 |
| 12/16/2013 | Blank | 12/27 - 12/28 | -0.23 ± 0.05 | 0.61 |
| | Blank | 12/31 - 1/1/14 | 0.14 ± 0.04 | 1.23 |
| 12/17/2013 | Line 9 | 12/18 - 12/19 | 41.6 ± 4.4 | 0.1 |
| | Line 9 | 12/30 - 12/31 | 41.8 ± 4.4 | 0.7 |
| 12/17/2013 | Blank | 12/18 - 12/19 | 0.22 ± 0.05 | 0.09 |
| | Blank | 12/30 - 12/31 | 0.60 ± 0.07 | 0.76 |

Radon concentrations between 20 and 41 pCi/L are elevated and could have significant human health impacts.

Table 3-18. Natural Gas Samples from Production Sites

| Sample ID | County | Gas Source | Radon Conc. +/- 2 S.D. (pCi/L) | MDA (pCi/L) |
|-----------|------------|----------------------|-----------------------------------|----------------|
| WP 08 RG | Washington | Marcellus Shale | 79.6 +/- 0.800 | 0.300 |
| WP 09 RG | Washington | Marcellus Shale | 78.8 +/- 4.20 | 0.300 |
| WP 22 RG | Tioga | Marcellus Shale | 42.8 +/- 0.200 | 0.100 |
| WP 23 RG | Tioga | Marcellus Shale | 39.6 +/- 0.800 | 0.200 |
| WP 24 RG | Tioga | Marcellus Shale | 73.8 +/- 0.400 | 0.200 |
| WP 25 RG | Tioga | Marcellus Shale | 44.4 +/- 2.60 | 0.200 |
| WP 26 RG | Lycoming | Oriskany Sandstone | 19.9 +/- 0.200 | 0.200 |
| WP 27 RG | Tioga | Marcellus Shale | 38.4 +/- 3.40 | 0.300 |
| WP 28 RG | Tioga | Marcellus Shale | 40.8 +/- 5.20 | 0.400 |
| WP 16 RG | Washington | Marcellus Shale | 50.0 +/- 5.20 | 0.300 |
| WP 17 RG | Washington | Marcellus Shale | 49.5 +/- 5.80 | 0.500 |
| WP 19 RG | McKean | Upper Devonian Shale | 18.3 +/- 4.40 | 0.400 |
| WP 20 RG | McKean | Upper Devonian Shale | 88.2 +/- 10.6 | 0.700 |
| WP 21 RG | Forest | Upper Devonian Shale | 92.2 +/- 6.40 | 0.400 |
| WP 04 RG | Tioga | Marcellus Shale | 49.6 +/- 29.6 | 1.20 |
| WP 05 RG | McKean | Marcellus Shale | 148 +/- 15.6 | 1.50 |
| WP 12 RG | Lycoming | Marcellus Shale | 37.6 +/- 33.4 | 2.20 |
| WP 11 RG | Tioga | Utica | 5.70 +/- 1.20 | 0.500 |
| WP 29 RG | Sullivan | Marcellus Shale | 23.4 +/- 4.00 | 0.240 |
| WP 30 RG | Bradford | Marcellus Shale | 25.5 +/- 2.70 | 0.200 |
| WP 31 RG | Bradford | Marcellus Shale | 3.00 +/- 1.20 | 0.300 |
| WP 14 RG | Jefferson | Marcellus Shale | 5.60 +/- 0.100 | 0.140 |
| | | Average | 47.9 | |
| | | Median = | 41.8 | |
| | | Standard Deviation | 34.5 | |

Note: All results adjusted to account for the fact that Rn was counted in methane, but the scintillation cells were calibrated for Rn in air. Range of α particles is greater in methane than in air. All results divided by 1.054, according to Jenkins et. al., Health Physics, Vol. 106, No. 3, March 2014.

44

⁴⁴ <http://www.elibrary.dep.state.pa.us/dsweb/Get/Document-112658/Pennsylvania%20Department%20of%20Environmental%20Protection%20TENORM%20Study%20Report%20Rev%201.pdf>

When it enters the environment, radon gas "... can move to air, groundwater, and surface water. Decay products of ^{222}Rn , such as ^{218}Po and ^{214}Pb , are solids that can attach to particles in the air and be transported this way in the atmosphere. They can be deposited on land or water by settling or by rain. Radon will undergo radioactive decay in the environment."⁴⁵

"...radon and subsequent decay product atoms are charged and tend to attach to aerosol particles. Radon progeny are similarly charged, readily aggregate, form clusters, and attach to dust particles in air. The main health problems arise when primarily those radon progeny that are attached to dust particles (termed the attached fraction) are inhaled, deposit in the airway (particularly the tracheobronchial tree), and irradiate nearby cells repetitively with alpha particles as each atom transforms through the decay chain..."⁴⁶

Regarding workers at gas operations sites and radon exposure, ATSDR notes: "...exposure to high concentrations can occur in any location with geologic radon sources. A list of common occupations that have the potential for high radon and progeny exposure ... include mine workers ... employees of water treatment plants, and radioactively contaminated sites can include ... oil refineries, power plants, and natural gas and oil piping facilities."⁴⁷

The amount of radon released by natural gas operations is not insignificant: "Fishbein (1992) has reported that coal residue and natural gas emissions release 20,000 and 10,000 Ci of ^{222}Rn each year, respectively..."⁴⁸

Interestingly, "Regulations regarding the land disposal of radionuclides, as set forth in 10 CFR 61 (USNRC 2008), do not apply to radium, radon, or its daughters...regulation of radon is up to the individual states."⁴⁹

The gathering of information about radon releases has been limited. "There is no information on releases of radon to the atmosphere from manufacturing and processing facilities because these releases are not required to be reported (EPA 1998)."⁵⁰ The air permit and modeling as proposed do not address radioactivity.

⁴⁵ <http://www.atsdr.cdc.gov/ToxProfiles/tp145.pdf>

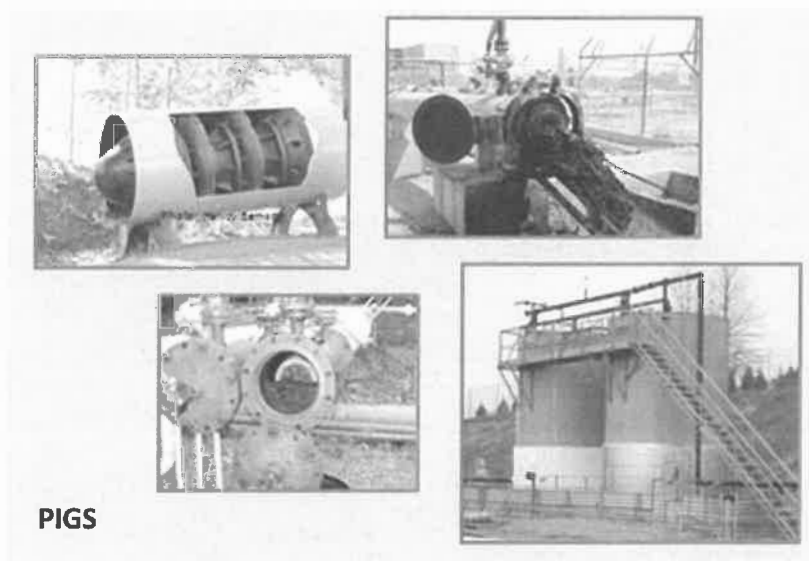
⁴⁶ Ibid, pg 16

⁴⁷ <http://www.atsdr.cdc.gov/ToxProfiles/tp145.pdf>, pg 124

⁴⁸ <http://www.atsdr.cdc.gov/ToxProfiles/tp145.pdf>, pg 126

⁴⁹ <http://www.atsdr.cdc.gov/ToxProfiles/tp145.pdf>, pg 118

⁵⁰ Op cit, ATSDR, pg 124



As radon decays within the pipeline, the solid daughter elements, polonium and lead, accumulate inside the pipes. PCBs and other contaminants such as black powder,⁵¹ and anaerobic microbials, do as well.⁵² PIGs (Pipeline Inspection or Intervention Gauge/Gizmo/Gadget⁵⁴) inspect or clean out the pipe, and become repositories of these toxins. These PIGs, with pipe film, black powder, bacteria, scale and sludge, must be removed from the pipeline, stored and eventually disposed.^{55 56 57 58}

⁵¹ Baldwin, Richard M. "Black powder problem will yield to understanding, planning." *Pipeline and Gas Industry* 82 (1999): 109-112. <http://muellerenvironmental.com/Documents/100-056-Black%20Powder.pdf> and Baldwin, Richard M. "Black powder control starts locally, works back to source." *Pipeline & Gas Industry* (1999): 81-87. <http://www.muellerenvironmental.com/Documents/100-058%20Black%20Powder2.pdf>

⁵² Mueller, Fred, and Mark Null. "Impurities in the Gas Stream." Mueller Environmental Designs, Inc. Technical Document, 2005. <http://www.muellerenvironmental.com/public/ProductDocuments.aspx>

⁵³ Zhu, Xiang Y., John Lubeck, and John J. Kilbane. "Characterization of microbial communities in gas industry pipelines." *Applied and environmental microbiology* 69.9 (2003): 5354-5363. Access at <http://aem.asm.org/content/69/9/5354.full.pdf>

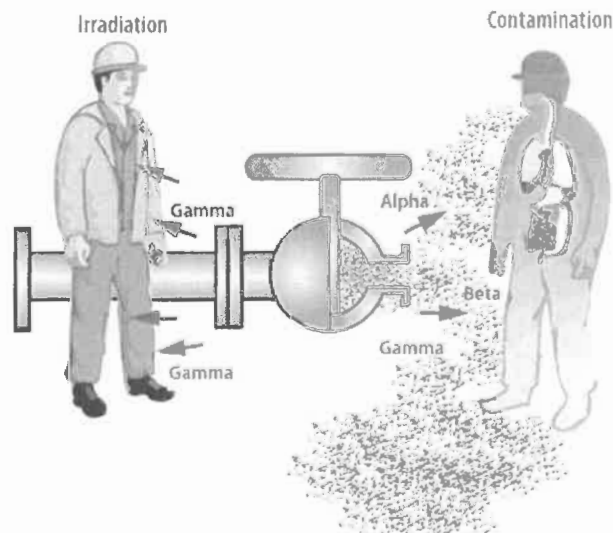
⁵⁴ <http://en.wikipedia.org/wiki/Pigging>

⁵⁵ http://www.rigzone.com/training/insight.asp?insight_id=310&c_id=19

⁵⁶ http://www.pigtek.com/advanced_pipeline_cleaning.php

⁵⁷ Tsochatzidis, Nikolaos A., and Konstantinos E. Maroulis. "Methods help remove black powder from gas pipelines." *Oil and Gas Journal* 105.10 (2007): 52. <http://www.desfa.gr/files/dimosieyseys/Tsochatzidis%26MaroulisOGJMar2007.pdf>

⁵⁸ Lindner, Hubert. "A new cleaning approach for black powder removal." *Pigging Products and Services Association*, 2006. <http://www.ppsa-online.com/papers/2006-Aberdeen-8-Lindner.Pdf>



NORM materials may become an inhalation risk when the material is dislodged by mechanical forces, such as wire brushing, pipe rattling etc. 59

At each step, precautions must be taken to avoid contaminating workers and residents.

"Natural gas plant scale typically consists of Rn decay progeny that accumulate on the interior surfaces of plant pipes and equipment ... As a result, the only radionuclides that remain and adhere to the interior surfaces of machinery/pipes are the Rn decay progeny Po-210 and Pb-210. These longer-lived decay progeny are not readily detected on the outside of pipes. However, Pb-210 and Po-210 emit α and β radioactive particles that may be a potential inhalation or ingestion hazard when pipes and machinery are opened for maintenance and/or cleaning. Access to the internal surfaces of pipes and equipment for surveys of surface α and β activity was not available. However, the facility propenizer equipment opened and sampled during filter change-out is representative of interior conditions... A Pb-210 activity result of 3,580 pCi/g was identified.... The results confirm the build-up of the longer-lived Rn decay progeny in equipment and pipes. The concentration of Pb-210 identified may present a potential inhalation or ingestion hazard during routine system maintenance."⁶⁰

Reviewer 6 of the PA DEP report wrote "...that maintenance workers at midstream facilities can also be exposed to Pb-210 and Po-210 when working on internals of pipe and equipment. Progeny tend to plate out on surfaces where there is turbulence in the flow. That would include pumps, elbows, pig launchers/catchers, etc., in addition to the compressor stations themselves."⁶¹

He continues: "It is the opinion of this reviewer that the alpha and beta contamination potential (and hazard) on well sites and compressor stations, gas plants, et al., is underestimated because there was no access to equipment internals. Also, Po- 210 does not appear to be considered, and that is an internal

⁵⁹ <http://www.ogp.org.uk/pubs/412.pdf>

⁶⁰ <http://www.dep.pa.gov/Business/Energy/OilandGasPrograms/OilandGasMgmt/Oil-and-Gas-Related-Topics/Pages/Radiation-Protection.aspx> sec 6-3

⁶¹ http://www.elibrary.dep.state.pa.us/dsweb/Get/Document-112656/Appendix_L-Peer%20Review%20Comment%20and%20Resolution%20Document.pdf Appendix L page 39 of original document

hazard. Maintenance workers, on and off site (e.g., at repair shops) could be exposed to significant contamination based on years of experience in the industry.”⁶²

Conclusion

There is a growing but already significant body of scientific evidence showing harms to public health from gas development, including compressor stations. And yet, despite this evidence, the monetary costs associated with the health impacts--premature death, birth defects, prematurity of birth, cancer, autism, learning disabilities and other problems--have never been entered into an economic analysis of fracking.

Some have supported gas development for the purported economic boost. The contrary is true—the industry will not be a recession buster.⁶³ From the peer-reviewed literature provided, it is also clear that the economic papers boasting a boon have been industry-sponsored, and have not taken into account the economic loss from existing economies like tourism and agriculture. In addition, the costs of health impacts have never been considered, and those will be significant.

A Health Impact Assessment, as described earlier, should be done to study the potential risks to the nearby population, including all vulnerable groups.

Residents of Buckingham have compiled this reasonable list of public concerns as it regards the DEQ air permit:

- **Request to extend comment period an additional 30 days, or 60 days total;**
- **Address inadequate compliance and monitoring plans;**
- **Address the lack of access to technical documents;**
- **Technical aspects of air permit that have not have been considered, like 24 hr monitoring;**
- **Comprehensive impacts;**
- **Take into account the higher radioactivity of Marcellus shale;**
- **Consider vulnerable populations such as children, the elderly and infirmed; an HIA would do this.**

And the residents of Buckingham request:

⁶² Ibid, pg L-42

⁶³ <http://theconversation.com/the-false-promise-of-fracking-and-local-jobs-36459>

- A Quantitative Risk Assessment (QRA) and Comprehensive Health Impact Assessment (HIA) to address the complex and multifaceted concerns presented by residents of Buckingham;
- Institutionalization of EJ, public safety, and health review before permitting or construction of large-scale infrastructure in minority and low-income communities;
- Meaningful participation by impacted populations in permitting and monitoring;
- Reduction of state disparity in exposure by which black and brown communities disproportionately experience harm from toxic air, unsafe water, and public safety risks;
- Development of clean and renewable energy alternatives.

At a minimum, the following should be done:

- Cumulative environmental impact study with a comprehensive Health Impact Assessment, including pre- during and post-construction health monitoring;
- Baseline measurements of air emissions, methane, radon and water quality, and continuous monitoring if compressor is approved;
- Cumulative emissions to include condensate tank emissions and fugitive methane;
- Best technologies, and for compressors, electric power source;
- Hazardous Materials Management Plan including plan for disposal of waste from condensate tanks and pipelines, and a NORM Monitoring Plan;
- An extension of the comment period to 60 days to allow residents in an area underserved by internet to access materials and submit comments.

Respectfully submitted,

Larysa Dyrszka, MD

Lar917dy@gmail.com

Co-founder Concerned Health Professionals of NY www.concernedhealthny.org

Exec board member Physicians for Social Responsibility PSR NY www.psr.org

ADDENDUM: additional information from a presentation (by Dr L Dyrszka) to several town boards in Sullivan County NY which requested additional information, then passed resolutions in opposition to the Millennium ESU.

POTENTIAL IMPACTS AND HEALTH CONCERNS, WITH A FOCUS ON COMPRESSORS

For an audio presentation on infrastructure, visit <http://www.psr.org/resources/webinar-health-impacts-of-gas-infrastructure.html>

An important impact of the gas infrastructure is an exacerbation of climate change which has been referred to in the journal "Lancet" as a medical emergency.⁶⁴

(Dr. Dyrszka) has recently co-authored relevant publications, and those are referenced here.⁶⁵

Importantly, climate change has national security implications.⁶⁶

In September, scientists at the Climate Implementation Project prepared a report, The Human Face of Climate Change, perspectives and recommendations for the next US President. Burke et al. 2016. Health: The Human Face of Climate Change Perspective and Recommendations for the Next U.S. President. ⁶⁷

"A range of studies has shown high levels of methane leaks from gas drilling, fracking, storage, and transportation, undermining the notion that natural gas is a climate solution or a transition fuel. Major studies, some cited here, have concluded that early work by the U.S. Environmental Protection Agency (EPA) greatly underestimated the impacts of methane and natural gas drilling on the climate. Drilling, fracking, the transport and expanded use of natural gas threaten not only to exacerbate climate change but also to stifle investments in, and expansion of, renewable energy. Further, the widely touted claim that the U.S. fracking boom is helping to drive recent declines in carbon dioxide emissions in the United States has been upended by new research showing that almost all of the emission reductions between 2007 and 2009 were the result of economic recession rather than coal-to-gas fuel switching, as was previously presumed."⁶⁸

⁶⁴ <http://www.climateandhealthalliance.org/news/2015-lancet-commission-on-health-and-climate-change>

⁶⁵ Webb et al. 2016. Potential hazards of air pollutant emissions from unconventional oil and natural gas operations on the respiratory health of children and infants. June 1, 2016. RevEnvironHealth. DOI: 10.1515/reveh-2014-0070. Access at: <https://www.ncbi.nlm.nih.gov/pubmed/27171386>

Too Dirty, Too Dangerous. 2017. Physicians for Social Responsibility. Access at: <http://www.psr.org/assets/pdfs/too-dirty-too-dangerous.pdf>

Concerned Health Professionals of New York. 2016. Compendium of Scientific, Medical, and Media Findings Demonstrating Risks and Harms of Fracking. Access at: <http://concernedhealthny.org/compendium/>

⁶⁶ https://www.eenews.net/assets/2016/09/21/document_pm_02.pdf

⁶⁷ Access at: <https://woods.stanford.edu/sites/default/files/Burke-Walsh-Barry-Paper.pdf>

⁶⁸ CHPNY Compendium

Methane is the second largest contributor to human-caused climate change, after carbon dioxide. Natural gas systems are the single largest source of anthropogenic methane emissions in the U.S., representing almost 40% of total emissions (EPA 2011 data)⁶⁹

Howarth tells us that methane contributes substantially to the greenhouse gas footprint on shorter time scales, dominating it on a 20-year time horizon.⁷⁰

Since the first Howarth paper was published, other studies have shown the need to consider methane emissions at the shorter time scales. Both a report from the United Nations and a paper by Shindell show that controlling CO₂ alone is not sufficient. The only way is to reduce methane emissions, beginning immediately.⁷¹

What evidence is there that the natural gas industry is the #1 source of methane emissions in the US? In an area near Denver Colorado, where gas drilling is the prominent industry, they are losing about 4% of their gas to the atmosphere — and that does not include additional losses in the pipeline and distribution system.⁷²

And recently, a federal agency, the National Oceanic and Atmospheric Agency (NOAA), wrote that the rate of methane emissions from natural gas production was 6.2-11.7% of average hourly natural gas production. And this will offset the climate benefits of natural gas over other fossil fuels.⁷³

This body of research tells us that methane emissions from unconventional gas development have been significantly underestimated by both the gas industry and the US EPA. Methane leaks have to be kept below 2 % for natural gas to be better than coal for slowing climate change.

The 2014 Intergovernmental Panel on Climate Change (IPCC) warns us that impacts of climate-related extremes include alteration of ecosystems, disruption of food production and water supply, damage to infrastructure and settlements, morbidity and mortality, and consequences for mental health and human well-being... People who are socially, economically, culturally, politically, institutionally, or otherwise marginalized are especially vulnerable to climate change...⁷⁴

And climate change impacts human health, documented for example by Drs Sheffield and Landrigan, and others.

“The overall risks of climate change impacts can be reduced by limiting the rate and magnitude of climate change.” These risks are all dependent on the emission scenarios, and all within our control.

- 2009 Sheffield and Landrigan. Global climate change costs significant healthcare dollars “Global Climate Change and Children’s Health: Threats and Strategies for Prevention”⁷⁵

⁶⁹ http://www.psehealthyenergy.org/data/PSE_ClimateImpactsSummary_ALLCitations_01Feb2013.pdf

⁷⁰ <http://link.springer.com/article/10.1007%2Fs10584-011-0061-5> and

http://www.eeb.cornell.edu/howarth/publications/Howarth_et_al_2012_National_Climate_Assessment.pdf

⁷¹ Shindell et al, Improved attribution of climate forcing to emissions, Science.

⁷² http://www.nature.com/polopoly_fs/1.99821/menu/main/topColumns/topLeftColumn/pdf/482139a.pdf

⁷³ <http://onlinelibrary.wiley.com/doi/10.1002/grl.50811/abstract>

⁷⁴ <http://ipcc-wg2.gov/AR5/report/>

⁷⁵ <http://www.ncbi.nlm.nih.gov/pmc/articles/PMC3059989/>

- 2009 Shindell. Methane is a potent greenhouse gas, 33 times more efficient at trapping heat than carbon dioxide over 100 years, and about 100 times more potent than carbon dioxide over 20 years.⁷⁶
- 2011 Howarth, Santoro and Ingraffea. "The footprint for shale gas is greater than that for conventional gas or oil when viewed on any time horizon, but particularly so over 20 years."⁷⁷
- 2012 Tollefson. In an area known as the Denver-Julesburg Basin, where gas drilling is the prominent industry, they are losing about 4% of their gas to the atmosphere — not including additional losses in the pipeline and distribution system.⁷⁸
- 2012 Howarth. While methane is only causing about 1/5th of the century-scale warming due to US emissions, it is responsible for nearly half the warming impact of current US emissions over the next 20 years.⁷⁹
- 2012 Myhrvold, N. P. and K Caldeira. The carbon dioxide emitted from burning natural gas contributes significantly to greenhouse gas emissions driving global climate change.⁸⁰
- 2013 NOAA and CIRES. An emission rate corresponding to 6.2-11.7% of average hourly natural gas production in Uintah County was measured in the month of February.⁸¹
- 2014 Intergovernmental Panel on Climate Change (IPCC). Impacts of climate-related extremes include alteration of ecosystems, disruption of food production and water supply, damage to infrastructure and settlements, morbidity and mortality, and consequences for mental health and human well-being... People who are socially, economically, culturally, politically, institutionally, or otherwise marginalized are especially vulnerable to climate change...⁸²

⁷⁶ Shindell et al, Improved attribution of climate forcing to emissions, Science.

⁷⁷ <http://link.springer.com/article/10.1007%2Fs10584-011-0061-5>

⁷⁸ http://www.nature.com/polopoly_fs/1.9982!/menu/main/topColumns/topLeftColumn/pdf/482139a.pdf

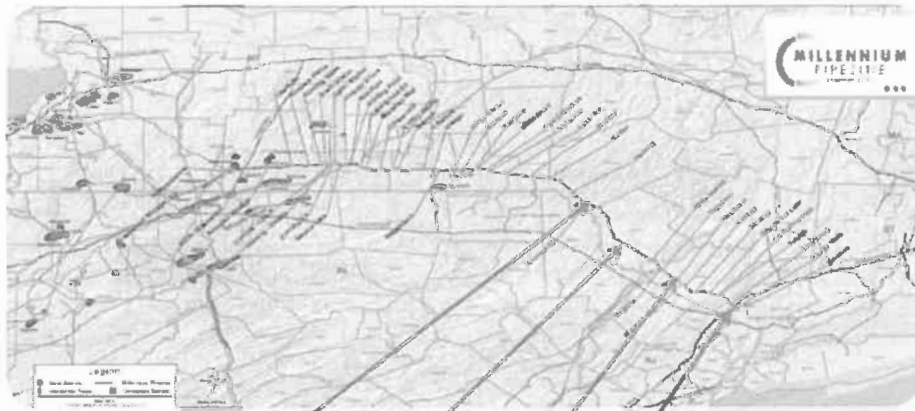
⁷⁹ http://www.eeb.cornell.edu/howarth/publications/Howarth_et_al_2012_National_Climate_Assessment.pdf

⁸⁰ http://iopscience.iop.org/1748-9326/7/1/014019/pdf/1748-9326_7_1_014019.pdf

⁸¹ <http://onlinelibrary.wiley.com/doi/10.1002/grl.50811/abstract>

⁸² <http://ipcc-wg2.gov/AR5/report/>

MILLENNIUM'S PROPOSED EASTERN SYSTEM UPGRADE PROJECT



- **Eastern System Upgrade Project includes**

- the addition of a new 22,400 hp compressor unit at Millennium's existing Hancock Compressor Station;
- the construction of a 22,400 hp new compressor station in Sullivan County, NY;
- the installation of approximately 7.3-miles of pipeline between Millennium's existing Huguenot and Westtown meter stations;
- the addition of facilities at Millennium's existing Ramapo meter station.

The Project will permit Millennium to transport an incremental volume of approximately 200,000 dekatherms per day

From permit applications we know that compressor stations emit:

- Nitrogen oxides (NOx) which are associated with respiratory disease. Ozone is formed when NOx and Volatile Organic Compounds (VOCs) react in the presence of heat and sunlight.
- Volatile organic compounds (VOCs) are neurotoxins and have significant cognitive and behavioral effects. They are known hepatotoxins, reproductive toxins and fetotoxins, and have been associated with teratogenesis and fetal wastage. All are dermatotoxins.
- Formaldehyde which is a carcinogen.
- Sulfur dioxide (SO₂) is associated with respiratory and neurological illness, and death.
- Particulate matter is of small size and carries toxic pollutants deep into the lungs, and is a carcinogen.

Following are the projected emissions from the ESU (from page 131 of the Millennium EA). Just the newly constructed compressors, not including the previously built Hancock compressor nor the metering/regulating stations, nor the Minisink compressor which really is part of this project, as well as the CPV power plant, will add over 200,000 tons per year of CO₂ equivalents.

| Table B-17 Summary of Annual Operational Emissions (tpy) ^a | | | | | | | | |
|---|-----------------|-----------------|---------------|------------------|-------------------|--------------|-------------------|-------------|
| Facility | NO _x | SO ₂ | CO | PM ₁₀ | PM _{2.5} | VOC | CO ₂ e | Total HAPs |
| Huguenot Loop | | | | | | | | |
| Fugitive emissions | N/A | N/A | N/A | N/A | N/A | 4.6E-06 | 1.5 | N/A |
| Huguenot Meter Station | | | | | | | | |
| Fugitive emissions | N/A | N/A | N/A | N/A | N/A | 1.9E-04 | 6.3 | N/A |
| Westtown Meter Station | | | | | | | | |
| Fugitive emissions | N/A | N/A | N/A | N/A | N/A | 1.9E-04 | 6.3 | N/A |
| Highland Compressor Station | | | | | | | | |
| Proposed compressor | 48.59 | 4.57 | 78.08 | 12.27 | 12.27 | 5.53 | 95,690 | 2.48 |
| Proposed emergency generator | 1.36 | 0.00 | 2.71 | 0.02 | 0.02 | 0.68 | 285 | 0.18 |
| Proposed fuel gas heater | 0.53 | 0.03 | 0.44 | 0.04 | 0.04 | 0.03 | 631 | 0.01 |
| Fugitive and vented emissions | N/A | N/A | N/A | N/A | N/A | 0.53 | 8,466.2 | N/A |
| Subtotal | 50.48 | 4.60 | 81.23 | 12.33 | 12.33 | 6.77 | 105,086.2 | 2.67 |
| Hancock Compressor Station | | | | | | | | |
| Existing PTE | 35.21 | 8.26 | 49.56 | 12.49 | 12.49 | 4.43 | 69,718 | 0.74 |
| Proposed compressor | 47.92 | 4.51 | 77.28 | 12.10 | 12.10 | 5.45 | 94,373 | 2.45 |
| Proposed emergency generator | 1.36 | 0.00 | 2.71 | 0.02 | 0.02 | 0.68 | 285 | 0.18 |
| Proposed fuel gas heater | 0.53 | 0.03 | 0.44 | 0.04 | 0.04 | 0.03 | 631 | 0.01 |
| Fugitive and vented emissions | N/A | N/A | N/A | N/A | N/A | 0.54 | 8,652 | N/A |
| Subtotal | 85.02 | 12.80 | 129.99 | 24.65 | 24.65 | 11.13 | 173,659 | 3.38 |
| Ramapo Meter Station^b | | | | | | | | |
| Existing PTE | 12.89 | 0.08 | 19.65 | 1.00 | 1.00 | 3.93 | 15,788 | 1.35 |
| Fugitive emissions | N/A | N/A | N/A | N/A | N/A | 1.9E-04 | 6.3 | N/A |
| Subtotal^b | 12.89 | .08 | 19.65 | 1.00 | 1.00 | 3.93 | 15,794.3 | 1.35 |
| PTE = potential to emit | | | | | | | | |
| ^a The numbers in this table have been rounded for presentation purposes. As a result, the totals may not reflect the sum of the addends. | | | | | | | | |
| ^b Operational emissions for the proposed fuel gas heater at the Ramapo Meter Station have not been quantified; however, the planned new heater is unlikely to require major source permitting. | | | | | | | | |

It is important to note that these numbers are based on projected emissions from modeling. As we have seen previously, this modeling does not take into account large spikes in emissions. Spikes on the order of 400 mcg/m3 have been witnessed during the Minisink study, while the AQI for the day

read in the low teens. These are not accounted for in the emissions modeling. Therefore, the true cost in co2 equivalents, and hence in human health, is much underestimated.

In the EA for Minisink the standards for the air emissions used modelling rather than direct measurements. And based on the modeling, FERC wrote

(<https://www.ferc.gov/industries/gas/enviro/eis/2012/03-02-12-ea/section-b.pdf>): "... the Minisink Compressor Station would not be a major source of air emissions under federal air quality permitting programs. In addition, the total potential emissions from the proposed station would comply with the EPA's NAAQS, in accordance with the CAA..."

In other words, they considered this safe. However, the data from a pilot study in Minisink suggests quite the opposite. (see Minisink study <https://sape2016.files.wordpress.com/2014/01/summary-of-minisink-results-public-swpa-ehp.pdf>)

A pediatrician, Dr Curtis Norgaard, writing in DotHouse Health, "A compressor station in New Hampshire: Analysis of health risks", estimated the following health outcomes for a similar compressor in New Hampshire:

Nitrogen dioxide: Increased respiratory hospitalizations (2%), heart failure (1.7%)

Carbon monoxide: Increased premature birth rates (4%), and put women at risk of having low birth weight babies (7%)

Sulfur dioxide: Low birth weight (3%), heart failure (2.4%)

Particulate matter: Increased fatality from heart and lung disease (5.3%), and new childhood asthma diagnoses (10-12%)

The components of natural gas and pipelines are:

- Methane (CH₄)
- Light and heavy alkanes
- BTEX - Benzene, toluene, ethylbenzene, and xylene
- Hydrogen and carbonyl sulfides
- Sulfur Dioxide (SO₂)
- Formaldehyde
- Particulate matter (tiny soot-like particles)
- Carbon monoxide (CO)
- VOCs
- Radon, polonium and lead
- Polychlorinated Biphenyls (PCBs) ⁸³

⁸³ http://sape2016.files.wordpress.com/2013/10/algonquin_incremental_market_project.pdf
http://courses.washington.edu/envir300/papers/Steinzor_et_al_2013.pdf
http://sape2016.files.wordpress.com/2013/10/air_quality_and_climate_impacts_of_shale_gas_operations.pdf

The sources are:

- Emissions and waste from transport vehicles, combustion at compressor stations, storage and condensate tanks, metering stations, processing plants, pipelines, compressor blowdowns, glycol dehydration units, amine units, separators.
- Flaring, venting and leaks⁸⁴

90% of individuals living within two miles of the compressors reported experiencing odor events from these facilities listed here. The exposure is cumulative and costly.^{85 86}

Following are some of the health impacts associated with infrastructure emissions:

NO_x is associated with respiratory disease. Low levels cause eye, nose, throat & lung irritation; coughing, shortness of breath; tiredness, nausea. High levels of exposure can seriously damage tissues in the throat and upper respiratory tract and trigger the build-up of fluid in the lungs. Additionally, nitrogen oxides also contribute to acid rain and can react with other pollutants to form ozone and particulate matter.

Modelling NO_x health effects based on measurements: (from Dr Curtis Nordgaard's presentation)

Health effects for 13.4 ug/m³ increase in NO₂: *New diagnoses* of childhood asthma: Increase 7% *Clinic visits* for asthma (all ages): Increase 4.4% *ER visits* for asthma: Increase by 3.8%.

Hospitalization increased: Asthma (2.2%), COPD (6.7%), stroke (3.7%), heart failure (6.7%)

Death from cardiovascular (1.1%) and respiratory (1.4%) diseases

VOCs (Volatile organic compounds) are organic chemicals that have a high vapor pressure at ordinary room temperature; they are neurotoxins, hepatotoxins, reproductive toxins, fetotoxins, and dermatotoxins. Short-term exposure to VOCs can irritate the respiratory tract and eyes and cause dizziness and headaches. Long-term exposure is linked to cancer and a number of adverse neurological, reproductive, and developmental effects. VOCs can also impact health by combining with nitrogen oxides to form ozone.

⁸⁴ http://www.edf.org/sites/default/files/9235_Barnett_Shale_Report.pdf
<http://www.epa.gov/airquality/oilandgas/pdfs/20120417presentation.pdf>

⁸⁵ http://www.earthworksaction.org/files/publications/SUBRA_3_Shale_Gas_PlaysHealth_Impacts_sm.pdf
<http://www.post-gazette.com/news/state/2013/10/06/Marcellus-gas-facilities-near-to-one-another-or-even-linked-are-evaluated-individually-for-pollution/stories/201310060050>

⁸⁶ Litovitz, Curtright, 2013, "Estimation of regional air-quality damages from Marcellus Shale natural gas extraction in Pennsylvania". Access at http://iopscience.iop.org/1748-9326/8/1/014017/pdf/1748-9326_8_1_014017.pdf and also <http://iopscience.iop.org/1748-9326/8/1/014017>

SO₂ is associated with respiratory illness. At high exposure levels, sulfur dioxide can cause temporary breathing difficulty for people with asthma and long-term exposure to high levels can aggravate cardiovascular diseases. Sulfur dioxide also reacts with nitrogen oxides and other air pollutants to form particle pollution and acid rain, which damages forest and aquatic ecosystems.

Particulate matter also known as particle pollution is made up of a mixture of solid particles and liquid droplets suspended in the air. While some particles such as dust and soot are large enough to be seen with the naked eye, others are so tiny that they can only be viewed with the aid of a microscope. Produced primarily by the combustion of fossil fuels, particulate matter is one of the deadliest air pollutants. Each year, particle pollution causes an estimated 60,000 premature deaths. Fine particles are especially dangerous because they can bypass the body's natural defenses to lodge deep in the lungs where they can pass easily into the bloodstream.

It contributes disproportionately to human health risks, and includes brain lesions resulting in neurobehavioral abnormalities. With small increases in airborne particulate matter exposure, human risks increase for the following:

- Cardiovascular disease-- heart attacks, strokes
- Respiratory disease-- asthma attacks, lung cancer
- Fetal and neonatal illness.
- Childhood illnesses: Pediatric allergies, ear/nose/throat and respiratory infections early in life, impaired lung development in children that affects lung function in adulthood, asthma, bronchiolitis, exacerbation of existing asthma and exacerbation of cystic fibrosis.
- in older people, it can lead to exacerbation of chronic obstructive pulmonary disease, congestive heart failure, heart conduction disorders, myocardial infarction and coronary artery disease, and diabetes in the elderly.
- Cancer

Formaldehyde causes cancer.

Tons of pollutants could seep into the soil and the regional watersheds.

References for health effects:

<http://www.atsdr.cdc.gov/toxfaqs/TF.asp?id=396&tid=69>

<http://www.psr.org/environment-and-health/climate-change/air-pollution/air-pollutants.html>

Wendt JK, et al. (2014). Environ Res, v131, 50-8.

To T et al. (2015). BMJ Open, v5, e009075.

Strickland MJ et al. (2010). Am J Respir Crit Care Med, v182, 307-316. Mills IC et al. (2015). BMJ Open, v5, e006946. <http://www.atsdr.cdc.gov/toxfaqs/TF.asp?id=396&tid=69>

<http://www.psr.org/environment-and-health/climate-change/air-pollution/air-pollutants.html>

<http://www.atsdr.cdc.gov/toxfaqs/TF.asp?id=396&tid=69>

<http://www.psr.org/environment-and-health/climate-change/air-pollution/air-pollutants.html>

<http://www.usatoday.com/story/news/nation/2014/06/09/air-pollution-autism-study/10226445/>

<http://www.atsdr.cdc.gov/toxfaqs/TF.asp?id=396&tid=69>

<http://www.psr.org/environment-and-health/climate-change/air-pollution/air-pollutants.html>

<http://ntp.niehs.nih.gov/ntp/roc/twelfth/profiles/formaldehyde.pdf>

http://www.picarro.com/resources/literature_publications/hydrocarbon_emissions_characterization_in_the_colorado_front_ran_0

Compilation of complaints from residents living near compressors:

most common COMPLAINTS of residents living near compressors:

- Skin rash or irritation
- Eye irritation
- Gastrointestinal problems such as pain, nausea, vomiting
- Respiratory problems such as difficulty breathing or cough
- Upper respiratory problems such as congestion, sore throat and nosebleeds
- Neurological problems such as headaches, movement disorders, dizziness
- Psychological problems such as anxiety, depression, stress, irritability



visualization of emission using a FLIR

camera

And long-term consequences:

- Cardiovascular, such as heart attack and high blood pressure
- Respiratory, such as exacerbation of asthma, COPD
- Neurological such as stroke and cognitive deficits in children
- Birth defects
- Cancer
- Premature mortality

Children and pregnant women are particularly affected in adverse ways by environmental toxins. Children are especially vulnerable to air pollution because their lungs continue to grow and enlarge until about age 18. Plus, they breathe faster and are closer to the ground.

Air pollution has also been shown to be associated with birth problems, neurodevelopmental disorders, lower IQ in babies born to mothers with polycyclic aromatic hydrocarbon exposure during pregnancy and learning disorders in exposed children.

A recent Harvard Public Health study linked an autism spike to air pollution. Children whose mothers were exposed to high levels of fine particulate pollution in late pregnancy have up to twice the risk of developing autism as children of mothers breathing cleaner air. The greater the exposure to fine particulates, the greater the risk.

Overall, although the evidence is just emerging for an association between air pollution and low birth weight, birth defects and neurodevelopmental problems, there is clearly a trend of association with some pollutants at some points during pregnancy and early childhood. These findings clearly demonstrate the need for additional studies as the public health implications of increasing the numbers of premature and low birth weight babies, as well as children with autism and birth defects are enormous.

REFERENCES for health impacts in vulnerable populations:

CEH, 2013, http://www.ceb.org/legacy/storage/documents/Fracking/fracking_final-low-1.pdf World Health Organization http://www.who.int/ceb/capacity/Children_are_not_little_adults.pdf

Wilhelm at UCLA report on air pollution and premature births

<http://www.environment.ucla.edu/reportcard/article.asp?parentid=1700> Perera, 2009

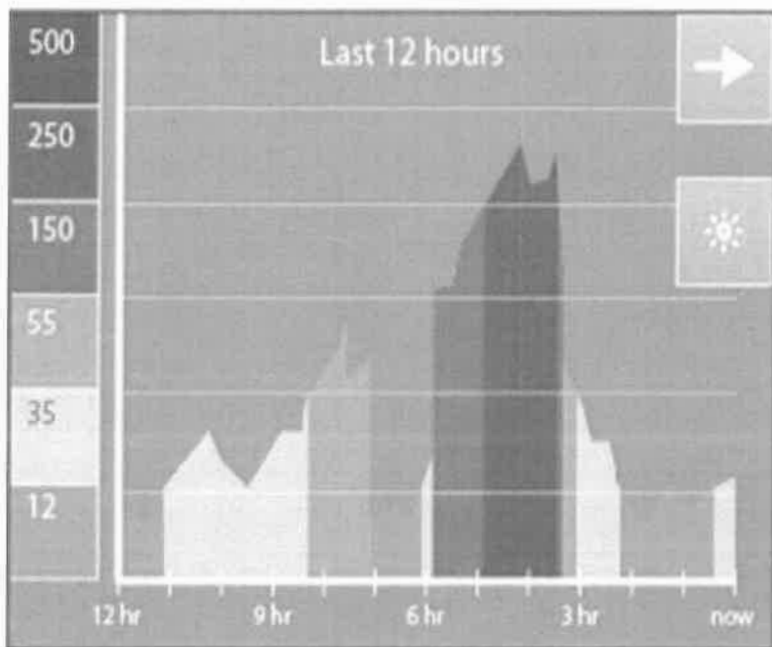
<http://www.ncbi.nlm.nih.gov/pmc/articles/PMC2864932/>

Perera et al, 2006. Effect of prenatal exposure to airborne polycyclic aromatic hydrocarbons on neurodevelopment in the first 3 years of life among inner-city children. Environ Health Perspect. Doi:114(8):1287–1292. <http://www.ncbi.nlm.nih.gov/pmc/articles/PMC1551985/>

Perera FP et al 2003 Effects of Transplacental Exposure to Environmental Pollutants on Birth Outcomes In a Multiethnic Population. Environmental Health Perspectives 111:2 201-205

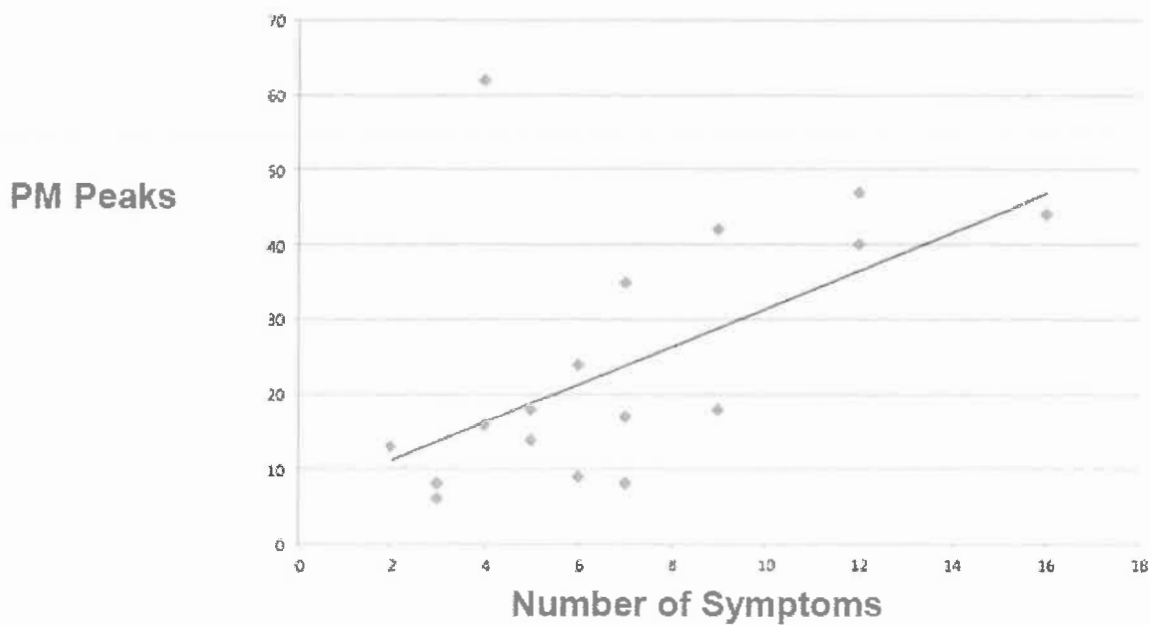
Weisskopf. December 2014. <http://ehp.niehs.nih.gov/1408133/>

The following graph is a screen shot of a SPECK Particulate Matter monitor 12-hour report. One would expect that symptom severity correlated with the height of the PM measurement.



And it did:

PM 2.5 Peaks vs. Number of symptoms (N=17)



This alerted SWPA-EHP to review data previously collected.

Particulate Matter (PM) was used as a marker for all the emissions from the compressor. SPECK or DYLOS monitors measured Particulate Matter.

Symptoms were assessed and plotted against the PM peaks.

And they found a correlation between the number of symptoms and PM peaks. In other words, they found that the # of peaks related in a linear fashion to # of symptoms.

The higher the PM monitor readings, the more health symptoms were observed.

The SWPA-EHP Minisink pilot project on compressors (next slide) was a response to a community need and request for an accurate assessment of exposures and health impacts since what they were experiencing as far as health impacts was not in synch with what FERC, the EPA and State agencies were modeling, and then stating that there should be no health impacts. Please recall that the FERC uses models and predictions to arrive at their conclusion. Please note that the measurements that are done by the company or government agencies are on a sampling basis and not continuous.

The SWPA-EHP study included community participation, a health professional to do individual health assessments, continuous monitoring for Particulate Matter both indoor and outdoor, and episodic VOC sampling with summa canisters.

The predominant health impacts reported were:

- Respiratory problems
- Neurological problems
- Dermatological problems
- Overall "quality of life" levels were below normal for half of the respondents when compared to a national standard (SF36).

Individual health assessments were completed on eight families in Minisink. We filled out 35 health intakes, 12 of which were for children. This is the most complete set of intakes from one community yet collected by any group looking at infrastructure health effects.

The residents were given and instructed on SPECK PM monitors to document indoor and outdoor PM. The readings showed significant recurrent spikes in the amount of particulate matter in the air inside and out. The spikes tended to occur at night when stable atmospheric conditions hold particulate matter low to the ground. And based on the residents' health diaries and individual health assessments, we concluded that it is likely that the spikes in airborne particulate matter are causing acute health impacts in community members.

In reviewing the health data, we found an association between respiratory and neurological affects – specifically headaches – which appeared to be occurring together in this group. Dermatological symptoms (rashes that come and go, and that may be allergic reactions) also appeared in nearly 1/3 of the intakes, along with concerns about health and related stress. These health findings are consistent with information from other research reported in peer-reviewed literature and by other environmental health organizations.

To summarize the health findings, the predominant health impacts reported were:

- Respiratory problems (22, includes 6 experiencing nosebleeds)
- Neurological problems, (12, all of whom report headaches)
- Dermatological problems (10)
- On the SF36, a standardized self-assessment--overall mental health and wellbeing levels were below normal for half of the respondents.

Based on the monitoring results and health intakes, EHP concluded that families living near the Minisink Compressor station are exposed to elevated levels of PM2.5, when compared to the regional AQI.

And further, the episodic nature of health symptoms reported by residents is likely associated with the episodic high emissions that come from the compressor station. This conclusion is supported by the periodically high levels of PM2.5 recorded by the Speck monitors, and the onset of symptoms after the compressor came online, plus no other logical explanation.

REFERENCES for Minisink study:

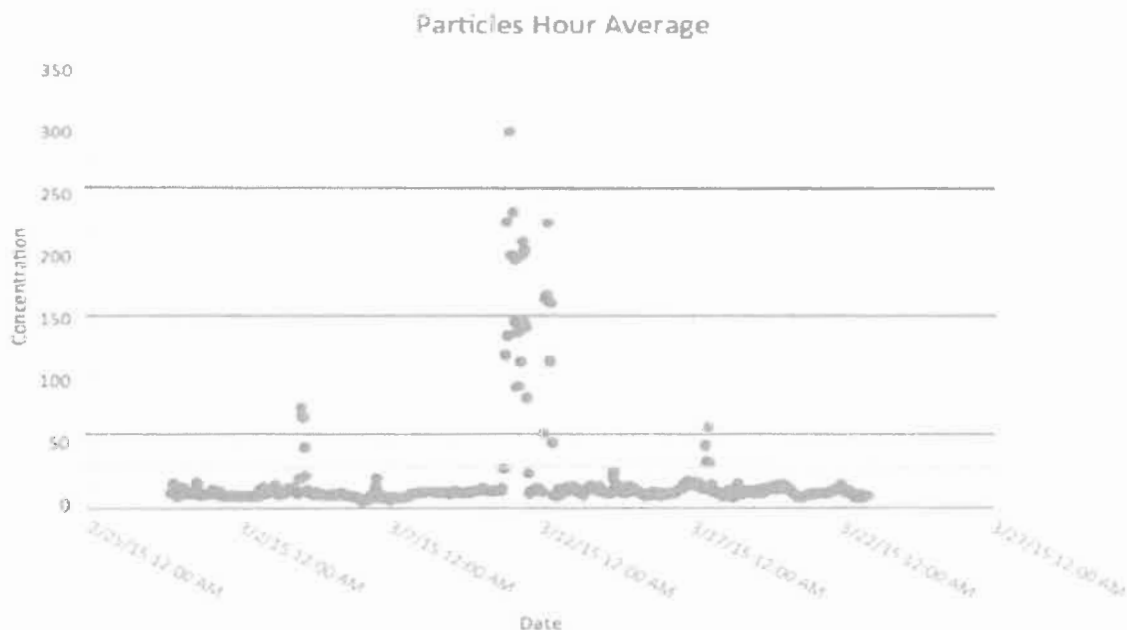
Human Exposure to Unconventional Natural Gas Development: A Public Health Demonstration of Periodic High Exposure to Chemical Mixtures in Ambient Air (Full Appendices)
Understanding exposure from natural gas drilling puts current air standards to the test

EHP RESULTS SUMMARIES

Physical, Mental and Environmental Impacts of Unconventional Oil and Gas Development Spring 2016
Summary of Minisink Compressor Station Monitoring Results
Summary on Compressor Stations and Health Impacts February 24, 2015

EXAMPLE OF SPECK RESULTS (UG/M3)

The speck monitor documented exceptionally high spikes that would not have been captured if averaged over a 24-hr period. The horizontal colored lines correlate with EPA aqi (air quality index) levels and the blue dots show the hourly spikes. The yellow line is the level at which sensitive individuals may be affected.



EPISODIC HIGH LEVELS OF PM_{2.5} OUTSIDE MULTIPLE HOMES OCCURRED WITHIN SIMILAR TIME FRAMES SEVEN TIMES OVER 59 DAYS. RESULTS ARE BASED ON HOURLY AVERAGES OF UG/M³ VALUES.

| Date of Peak event | # of monitors showing a peak out of # in use | Recorded peak levels | Daily AQI average |
|--------------------|--|----------------------|-------------------|
| 10/30 | 3/4 | 31, 90, 426 | 5.0 |
| 11/5 | 2/5 | 33, 57 | 5.5 |
| 11/7 | 3/5 | 36.5, 114, 133 | 5.3 |
| 11/12 | 4/5 | 53.7, 131, 269, 325 | 9.0 |
| 12/3 | 3/5 | 40, 235, 399 | 5.0 |
| 12/6 | 2/5 | 76, 160 | 10.8 |
| 12/17 | 3/5 | 99, 162, 229 | 9.9 |

In the chart above, the data presented shows the episodic high levels of PM, and documented outside multiple homes.

It is clear that the recorded peaks were NOT captured by the AQI daily average (last column on the right). Nor would they be – since it is a 24-hour average for the region.

During the monitoring period, the SPECK monitors recorded at least three times the regional average of 6.3 micrograms per cubic meter (ug/M3), and regularly beyond the Environmental Protection Agency limit of 12. Multiple episodes of peaks into the hundreds were also recorded by Speck monitors.

A study published in June by Harvard epidemiologist Joel Schwartz and his colleagues identified the dangers of PM 2.5 even above 6. Each increase of one microgram per cubic meter increases the mortality rate by 1 percent for people over 65, they found.⁸⁷

SWPA EHP is currently in the process of gathering information on several compressors in NY, in partnership with the Institute for Health and the Environment at Albany and the Madison County Health Dept.

That includes the Town of Highland and the Hancock compressor stations where the baselines have already been done.

The study goals are...

- To assess residents' health status before, during and after construction
- Monitor the environmental factors
- And analyze the results

There is a process which brings public health to the table and which can inform land use decisions and should be used prior to the development of regulations and before permitting. It is particularly important in the case of gas exploration and production.

“HIA IS A SYSTEMATIC PROCESS THAT USES AN ARRAY OF DATA SOURCES AND ANALYTIC METHODS AND CONSIDERS INPUT FROM STAKEHOLDERS TO DETERMINE THE POTENTIAL EFFECTS OF A PROPOSED POLICY, PLAN, PROGRAM, OR PROJECT ON THE HEALTH OF A POPULATION AND THE DISTRIBUTION OF THOSE EFFECTS WITHIN THE POPULATION. HIA PROVIDES RECOMMENDATIONS ON MONITORING AND MANAGING THOSE EFFECTS.”

“IMPROVING HEALTH IN THE UNITED STATES: THE ROLE OF HEALTH IMPACT ASSESSMENT”⁸⁸

⁸⁷

http://www.templenh.org/sites/templenh/files/file/file/minisink_ny_compressor_health_study_fall_2015.pdf

⁸⁸ [HTTP://WWW.NAP.EDU/CATALOG.PHP?RECORD_ID=13229](http://www.nap.edu/catalog.php?record_id=13229)



MEDICAL SOCIETY OF THE STATE OF NEW YORK

May 2, 2015 – The Medical Society of the State of New York adopted a resolution, “Protecting Public Health from Natural Gas Infrastructure,” that recognizes the potential impact to human health and the environment of natural gas pipelines and calls for a governmental assessment of these risks.



AMERICAN MEDICAL ASSOCIATION

June 9, 2015 -- The American Medical Association (AMA) adopted a resolution, “Protecting Public Health from Natural Gas Infrastructure,” that states, “Our AMA recognizes the potential impact on human health associated with natural gas infrastructure and supports legislation that would require a comprehensive Health Impact Assessment regarding the health risks that may be associated with natural gas pipelines.”

This is needed, at a minimum:

- **Cumulative environmental impact study with a comprehensive health assessment, including pre- during and post-construction health monitoring**
- **Baseline measurements of air emissions, methane, radon and water quality, and continuous monitoring if compressor is approved**
- **Cumulative emissions to include condensate tank emissions and fugitive methane**
- **Best technologies, and for compressors, electric power source**
- **Hazardous Materials Management Plan including plan for disposal of waste from condensate tanks and pipelines, and a NORM Monitoring Plan**

Larysa Dyrszka, MD

Lar917dy@gmail.com

Co-founder Concerned Health Professionals of NY www.concernedhealthny.org

Exec board member Physicians for Social Responsibility PSR NY www.psr.org



*Concerned
Health Professionals of NY*



Compendium of Scientific, Medical, and Media Findings Demonstrating Risks and Harms of Fracking (Unconventional Gas and Oil Extraction)

Fifth Edition

March 2018



Fracking industry site near Greers Ferry Lake in Quitman, Arkansas in the Fayetteville Shale region. ©2014 Julie Dermansky

*full text of report
available on DEQ website*



Air Division 1, rr <airdivision1@deq.virginia.gov>

BSC air permit public comment

1 message

Finley-Brook, Mary <mbrook@richmond.edu>

Fri, Sep 21, 2018 at 4:59 PM

To: "airdivision1@deq.virginia.gov" <airdivision1@deq.virginia.gov>

Please find attached.

Mary Finley-Brook

Associate Professor of Geography

#310 Carole Weinstein International Center University of Richmond Richmond VA, 23173

(804) 287-6307

public comment MFB Sept 21 2018 BCS.pdf
1678K

161

Piedmont Regional Office
RE: Buckingham Compressor Station
4949-A Cox Rd
Glen Allen, VA 23060

E-mail: airdivision1@deq.virginia.gov

Fax: (804) 527-5106

PERMIT NAME:

- Minor Source Construction Permit issued under the authority of the Air Pollution Control Board

APPLICANT NAME AND REGISTRATION NUMBER:

- Atlantic Coast Pipeline, LLC; 21599

FACILITY NAME AND ADDRESS:

- ACP – Dominion Energy Buckingham Compressor Station; 5297 S. James River Hwy,
Wingina, VA 24599

Dear Air Pollution Control Board and State Regulators,

I am writing you as a faculty member at the University of Richmond in the Environmental Studies Program and as a member of the Governor's Advisory Council on Environmental Justice (ACEJ). I have spent the past nine months conducting intense environmental and social impact review of the Atlantic Coast Pipeline (ACP)-Dominion Energy Buckingham Compressor Station permitting process. I have reviewed environmental and social impacts of development projects for more than two decades and have focused specifically on energy projects sited in low income and minority areas for the past decade.

Environmental racism

I have observed the situation in Buckingham for the past four years since the ACP proposal. My engagement increased after ACEJ was contacted in March of 2018 by the impacted Union Hill community, Friends of Buckingham, and Yogaville. We created a Pipeline Subcommittee to investigate allegations of environmental racism in Buckingham and at other points along the route of the ACP and the Mountain Valley Pipeline. ACEJ found ample evidence of racial discrimination and documented this in a recent letter to Governor Northam (see Appendix 1 attached to this letter). ACEJ members from across the state reached consensus before expressing our concerns to the Governor. We spoke to impacted residents on various occasions and received hundreds of pages of documentation to support our extremely grave findings.

The proposed compressor station is sited in a historic Freedman community with many families directly descended from enslaved peoples who worked in the tobacco plantation and who have maintained ongoing and direct ties to Union Hill. The erasure of hundreds of African American Union Hill residents from project assessments first by the Federal Energy Regulatory Commission (FERC) and then by Virginian state agencies provides a faulty foundation for the entire permitting process.

Environmental justice in federal and state policies

The Environmental Protection Agency defines Environmental Justice as the fair treatment and meaningful involvement of all people regardless of race, color, national origin, or income with respect to the development, implementation, and enforcement of environmental laws, regulations, and policies. The term has its roots in Civil Rights law, specifically Title VI of the 1964 Civil Rights Act.

Federal policy

The first three elements of Executive Order 12898 of February 11, 1994 on Environmental Justice are (1) to promote enforcement of all health and environmental statutes in areas with minority populations and low-income populations; (2) to ensure greater public participation; and (3) to improve research and data collection relating to the health of and environment of minority populations and low-income populations. This comment and dozens of others submitted about this same compressor station discuss how these three points have not occurred in Buckingham prior to and during the permitting process.

State policy

The situation in Union Hill is in direct contrast to the stated objectives of state leaders during the creation of ACEJ. Executive Order 73 states, "The Commonwealth requires a consistent, action-oriented approach to incorporating environmental justice into decision-making."

Under energy objectives, the Code of Virginia, (Title 67. Virginia Energy Plan, Chapter 1. Energy Policy of the Commonwealth § 67-101) seeks to develop "energy resources and facilities in a manner that does not impose a disproportionate adverse impact on economically disadvantaged or minority communities."

It would be in violation of this code if the state were to risk the lives of Union Hill residents with high-pressure and potentially explosive infrastructure. Hundreds of vulnerable residents live within 2-mile blast zone. There is no evacuation plan and there has been inadequate attention to the need for emergency responders. Hospitals are located more than an hour away.

Inadequacy of the 30-day comment period

My research over the past two decades has focused on site review of new energy infrastructure. In particular, my specialty is to assess the involvement of impacted communities, a key stakeholder group. For this reason, I will draw your attention to the September 2018 Resolution of the ACEJ, submitted to Governor Northam (see [Appendix 2](#)), reinforcing the community's request for a 60-day total public comment period. The Governor's Advisory Council heard arguments from the impacted community that included the following: 1) the rural location means there is inadequate access to internet to obtain project information, 2) due to a disproportionately high percentage of elderly residents in the direct vicinity, and their lack of experience reading air regulations, the technical nature of the air permit requires sufficient time for people to understand the specific details, 3) a printed copy of the air permit application was not made available in Buckingham until the review period was half over, and 4) local community organizations requested an extension with additional details on why more time was required.

Having spent many hours with impacted community members as they prepared comments, I confidently assert that the 30-day period is an insufficient amount of time for Union Hill. In my professional opinion, the pressure the 30-day period caused to a community already struggling to deal with the scope of this situation was highly inappropriate. I have seen elderly African American residents who live within one mile of the compressor station in tears while trying to prepare these comments. Retired individuals in their 70s would take materials home to study late into the night and come back again in frustration and despair having written pages of concerns but uncertain of how to word them so anyone would listen. In my presence, residents were informed by DEQ that if they did not word comments to address technical details and those considered relevant by DEQ that their comments would be marked as irrelevant and disregarded. I fear that the state is too distant to understand the degree of stress this process brought to this vulnerable community. The vast and broad concerns, some with potentially fatal consequences like fire and explosion, which keep impacted community members awake at night, should not be marked as irrelevant in the public commenting process because of the narrowness and fragmentation of state permitting authority. Community concerns never fit anywhere properly according to the state agencies we asked. If nearly all dire local concerns are repeatedly outside the scope of the state permitting authority, there is something wrong with the state regulatory process! After hitting walls for four years, residents from Buckingham decided to join with the Virginia Environmental Justice Collaborative, made up of 18 civil rights, environmental, community-based, and faith-based organizations from across the Commonwealth, to draft the following letter to federal, state, and local officials ([Appendix 3](#)). It highlighted the need for comprehensive and cumulative review sensitive to local culture and history. In particular, community members have repeatedly asked for Quantitative Risk Assessment (QRA) and Health Risk Assessment (HRA).

Impacted communities are constantly told they should do more or do things differently, while state agencies have many excuses explaining how they cannot help, do not have the resources, do not have the authority, do not have the time, do not have the specific expertise, etc. Due to budgetary constraints, state agencies are offloading environmental management duties on to citizens, non-governmental organizations, and volunteers such as myself without giving the respect, authority, or support necessary for us to be successful in protecting the environment. State agencies do not help provide enough technical support to regular citizens for them to defend their basic rights of clean air and water during permitting decisions.

DEQ and other state agencies needs greater parity in their technical support moving forward to achieve compliance with federal and state policy

The technical support provided to Buckingham was woefully inadequate. When residents asked DEQ technical questions at the one and only 'Question and Answer' session during the public comment period (and none had happened prior), they were frequently referred to the website without understanding of how unrealistic that is for an elderly resident who is not web literate and has very little experience navigating regulatory websites or understanding technical language. In our meeting site at the local church where we would work on writing comments, there is no web access due to the lack of internet service coverage in Buckingham. Residents could not look up information because of the state not making it available in a format appropriate to the local context. A printed copy should have been made available in the direct vicinity of the proposed compressor station as the dispersed geography of the county meant the one copy in the library was not enough.

There was insufficient access to technical experts from the state during four years of this permitting and particularly following the new 2018 permit application. Professionals willing to volunteer above and beyond other work commitments, such as myself, were the main technical support the community had. We were told yesterday in a meeting with nine DEQ representatives that this was the common route (i.e., offload technical support to the volunteer public, who often lacks the training necessary to work efficiently with the 275 different air regulations). This advice was given as we expressed how unjust the technical support process has been, with the permit-seeking firm gaining frequent access and the impacted community left without support. The professionals we spent hours identifying and we begging volunteer support from were often not able to find the time to help given the short window from the release to the public of the air permit application and the end of the public comment period.

In sum, in my professional opinion, based on many hours spent with local residents, state efforts were inadequate and the 30-day deadline was insensitive to local conditions and needs. The 30-day extension request from the community, backed by the ACEJ Resolution (Appendix 2), has been ignored. The lack of response to the 30-day extension paired with the lack of technical support seems to suggest state regulators either seek to limit community input or do not value local concerns. Even at the end of the 30-day period today, community members have more than 100 unanswered questions about the project (see Appendix 4).

ACP/Dominion Energy should notify local authorities prior to each venting event

Criteria pollutants are harmful at concentrations on time intervals that do not violate NAAQS.

Since residents have pre-existing conditions, such as respiratory disease, they will need to be more careful about exposure to venting episodes than the average healthy population upon which NAAQS were set. Unless DEQ can guarantee that they have done comprehensive and cumulative impacts from multiple exposures across time, they should treat each and all exposure in minority areas and low-income areas as dangerous. Until the state can have permitting and regulation match real air pollution exposures, which intersperse even when they come from different sources and different permits and which involve chemical reactions between different releases, the state needs to use the most basic element of environmental protection, that of the precautionary principle. Since environmental cleanup is much more expensive than prevention, then we should act on the side of caution. Many of the residents of Union Hill have respiratory illnesses already, suggesting existing exposures. If DEQ cannot prove that cumulative and comprehensive impacts of all combined exposures over time are safe for the elderly, young, and otherwise vulnerable populations of the proximate neighborhoods, the prudent decision would be to reject the permit. Similarly, unless DEQ can prove methane does not contribute to climate change, the prudent decision would be to reject methane releasing infrastructure like the ACP and the Union Hill Compressor Station.

If permitting is still considered, even though it is not prudent in this location, the next best practice would be to treat every blowdown like a high risk episode because of the vulnerability of the 99 households in the 1.1 mile radius. Best practice (like DEQ's technical BACT goals) would be to create a system of notification and a system of fence line monitoring.

Monitoring and compliance must occur for the full life of the project

The Union Hill Compressor Station air permit involves experimentation with relatively unproven technology, so additional evaluation and monitoring is necessary. I have heard with my own ears on multiple occasions DEQ air permitting staff state that Dominion Energy was not prepared with their permit applications and that they needed teaching to prepare this proposal. What guarantee does the community have moving forward that this teaching of the permit writers will continue as company practice in the Union Hill Compressor Station? If the company was not prepared to write an environmentally sound proposal without the support of DEQ, this is further evidence that monitoring and compliance needs to be stringent. Self-reporting should be monitored, reporting metrics must be regular and frequent enough to catch errors or gaps, and compliance monitoring and reporting must continue for the entire lifespan of the compressor station (i.e., through decommissioning of infrastructure and disposal of all materials and wastes from the site).

Under pressure from the community to address the lack of evacuation plan or details about safety risks, company representatives have suggested different possibilities for short-term oversight (i.e., only the first year). Currently they are suggesting they might cover first responders only for the first 7-10 years. Along with safety protections, monitoring and compliance are necessary for the full lifespan of the project. First, older and aging facilities have additional risks, so ending safeguards while the plant is still in operation would be negligent. Second, it is inappropriate for a powerful company to be negotiating with a relatively powerless community over the terms of emergency support, particularly since this negotiation is occurring with a few individual leaders in closed-door settings and private secret meetings. Without legal or technical support, leaders are being encouraged by Dominion Energy representative Basil Gooden to act quickly, followed with an assertion that they risk not getting anything if they do not act now. This is the type of pattern I document regularly in energy projects in developing countries with weak democracies. It is alarming to hear regular eyewitness accounts of such practices occurring in the Commonwealth of Virginia and in the United States of America.

Safety monitoring and compliance needs to include the full scope of the project and cannot fragment permitting of NAAQS or of methane or any other ecological, social, or cultural impacts

This compressor station air permitting is fragmented, which makes each decision only partially accurate, as also occurs with water permitting and other related aspects. Ecological damage and health risks in marginalized communities fall through the regulatory cracks in Virginia constantly. Similarly, state resources tend not to be directed toward preserving rural African American history sites without name recognition, such as the slave burial grounds in Union Hill. I have seen with my own eyes hundreds of graves that lack historical preservation. Until Virginian officials and agencies admit how much they are missing in their official and formal assessments, Union Hill Freedmen descendants will continue to experience oppression that never ended with the emaciation of their ancestors from slavery. Oppression continues with institutionalized and systemic racism.

Compliance monitoring requires the involvement of the community

Union Hill compressor station provides a watershed moment. DEQ air permit staff seems to want to increase community involvement moving forward. As someone who studies environmental behavior, I can confidently assert that both the literature and my years of experience clearly demonstrate hands-on and direct involvement in environmental management decisions is an excellent means for educating citizens and motivating on-going engagement and action. Informed and empowered citizen who are involved in their local communities will continue to advance DEQ's goal of environmental protection.

Broad community involvement in monitoring improves protection, but it is also necessary to institutionalize with transparency because of the direct actions by Dominion Energy in this community for the past four years. This week, through their paid representative, Basil Gooden, there are company efforts to limit involvement of local residents who allowed to give input on so-called economic development advisory group--shrinking from ten residents down to just six. This is in direct contradiction to DEQ and other state agency's calls for public input. Eyewitnesses tell me Gooden advises his selected community members to not ask for "too much" and suggests incentives like a hiking trail and a community center. In contrast, local residents have been inquiring about things like relocation or a paid settlement for those living within two miles.

Compliance best practice (on parity with attempts at BACT in the technical realm) would include 1) legal representation or at least legal counsel for impacted residents, and 2) monitoring and compliance guidance and coordination by Jerome Brooks (or another state agency Environmental Justice Coordinator). Given federal and state claims to advance environmental justice, it would be advisable to include one or more members of the National Environmental Justice Advisory Council (NEJAC) or state Advisory Council on Environmental Justice (ACEJ) in a support role.

If state environmental agencies are going to continue to be underfunded, there needs to be new forms of safeguards established. The privatization of safeguard roles gives more power to the private sector (i.e., the project owners and their tightly associated network of consultants). At the same time, reducing the oversight capacity of the state creates additional openings for environmental injustice. Cuts in DEQ's budget and reductions in staff are advancing discriminatory practices because they cannot add new air monitors (these historically have not been sited in communities of color) or new outreach, participation or education programs (these historically have not been sited in communities of color). At the same time, while there is recognition of to improve research and data collection relating to the health of and environment of minority populations and low-income populations, the state consistently argues they do not have the time or resources. Therefore, in this case, we see environmental racism not only in the siting of the compressor station creating disproportionate harm and risk for vulnerable and marginalized populations, but also in the unequal coverage of protective and preventative services and inequality in research and data collection.

The need for the ACP is in question

The need for the ACP is questioned by many economic and energy experts, particularly this past year. It seems likely this pipeline case, and the Union Hill Compressor Station as well, will be litigated for many years--with lawsuits challenging inadequate reviews before

permitting, racially motivated siting, and even the need for this new infrastructure given the number of other pipelines nearby. Lack of demonstrated need might advance climate change lawsuits, since this pipeline's methane unnecessarily harms youth and our planet's future.

Dr. Mary Finley-Brook
Associate Professor of Geography and Environmental Studies
University of Richmond
Richmond VA, 23173
(804) 287-6307
mbrook@richmond.edu

Appendix 1

To: Governor Northam
From: Advisory Council on Environmental Justice
Re: Environmental Justice Review of Virginia's Gas Infrastructure
Date: August 16, 2018

Dear Governor Northam:

The Advisory Council on Environmental Justice (ACEJ) was established to provide advice and recommendations to the Governor to improve equity in decision-making and improve public health in marginalized communities, among other goals listed in Executive Order 73 (EO 73) from October of 2017.¹ We appreciate the opportunity to communicate our first formal set of environmental justice concerns to the Executive Branch since our inauguration six months ago. Investigating and evaluating the proposed MVP and ACP pipeline and its' associated infrastructure has raised a myriad of issues (legal, scientific, technical, environmental, cultural, political, economic and social justice) that challenge our complete comprehension and integration. Consequently, we vigorously recommend the Governor use this situation as an opportunity to engage and encourage our state agencies to collaborate proactively to educate themselves and the public on the complex links and impacts of fossil fuel use on human health and quality of life. These links are many, both historic and current and the potential future impacts are likely to be felt most severely by our poor, minority and marginalized communities and community members. The people who have to live with the consequences of a decision should get to make that decision or at least have meaningful involvement in the decision-making process.

Historically the term environmental justice has meant ensuring that vulnerable populations including low income and/or minority populations are not disproportionately affected by environmental exposures that have known adverse effects. The Environmental Protection Agency defines environmental justice as the fair treatment and meaningful involvement of all people regardless of race, color, national origin, or income with respect to the development, implementation, and enforcement of environmental laws, regulations, and policies. The term has its roots in Civil Rights law, specifically Title VI of the 1964 Civil Rights Act, which prohibits discrimination on the basis of race, color, and national origin in programs and activities receiving federal financial assistance. For states like Virginia with significant diversity, it is necessary to examine the use of state-level policy mechanisms, such as eminent domain, to ensure their use does not result in discriminatory acts against its citizens.

The Council's examination of evidence submitted from the Union Hill in Buckingham County community has revealed to us that this community, like many others within the state,

¹ The duties of the Governor's Advisory Council are to provide advice and recommendations to the Executive Branch on the following: Integrating environmental justice considerations throughout the Commonwealth's programs, regulations, policies, and procedures; 2. Improving the environment and public health in communities disproportionately burdened by environmental pollution and risks; 3. Ensuring transparent, authentic, and equitable engagement in decision-making, building capacity in disproportionately burdened communities, and promoting collaborative problem-solving for issues involving environmental justice; 4. Strengthening partnerships on environmental justice among governmental agencies, including Federal, State, Tribal, and local governments; 5. Enhancing research and assessment approaches related to environmental justice; 6. Receiving comments, concerns, and recommendations from individuals throughout the Commonwealth; and 7. Developing resources and strategies to provide and disseminate information to the public. See <https://www.naturalresources.virginia.gov/media/governorvirginiagov/secretary-of-natural-resources/pdf/eo-73-establishment-of-an-advisory-council-on-environmental-justice.pdf>.

has a significant population fitting the environmental justice criteria. Many of Buckingham's residents, because of their race or color, have been the historical recipients of unequal treatment, for which the above-listed Executive Order was signed to serve as a remedy. Therefore, we encourage that these recommendations (and others that may be directed to the Governor from this Commission in the future) be viewed through this lens so that the state of Virginia can ensure policies, programs and practices will not have unintended consequences that harm citizens who have a history of disenfranchisement. Additionally, the Council recognizes the lack of bottom up participation and consultation among Virginia's Indigenous Peoples regarding "Free, Prior, and Informed Consent" (FPIC), as defined in the United Nation's Declaration on the Rights of Indigenous Peoples (UNDRIP) in 2007.²

In order to move Virginia forward ensuring its place as a leader in environmental justice, addressing the global climate crisis, and building a 21st Century clean energy economy we recommend that the governor direct state permitting agencies to prioritize renewable energy solutions, and quickly transition away from fossil fuels. The Governor's Advisory Council on Environmental Justice (ACEJ) recommends that the 401 Clean Water Act certifications for the Atlantic Coast Pipeline (ACP) and the Mountain Valley Pipeline (MVP) be rescinded immediately. Likewise ACEJ recommends that the Governor direct DEQ to suspend the permitting decision for the air permit for the Buckingham compressor station pending further review of the station's impacts on the health and the lives of those living in close proximity. We also recommend that a review of permitting policies and procedures take place and that the governor direct the Air Pollution Control Board, DEQ, and DMME to stay all further permits for ACP and MVP to ensure that predominately poor, indigenous, brown and/or black communities do not bear an unequal burden of environmental pollutants and life-altering disruptions. These actions would ensure that environmental justice has meaningful influence in all current and future energy projects.

Our concerns fall into seven areas:

- 1) Residents of Buckingham have provided comment to the Council that raise questions about the need for the pipeline given decreasing domestic demand
- 2) The Council recommends that if there is a change in demand that renewables be prioritized over natural gas.
- 3) Residents have provided comment to the Council about the potential for civil rights violations.
- 4) Union Hill Compressor Station in Buckingham County (ACP CS-2) may have a disproportionate impact on this predominately African American community and could be perceived as exhibiting racism in siting, zoning, and permitting decisions and public health risk;
- 5) Federal and state review of assessments of risk for cultural and historical resources as a result of the Mountain Valley Pipeline (MVP) and the Atlantic Coast Pipeline (ACP) are incomplete;
- 6) The Council has concluded that federal and state reviews of water quality risks from the MVP and the ACP have not adequately assessed potential impacts for vulnerable populations; and

² US support of UNDRIP was announced in 2010.
http://www.un.org/esa/socdev/unpfii/documents/DRIPS_en.pdf

- 7) Methane from gas infrastructure has the potential to contribute significantly to climate change at a time when Virginian's climate impacts are increasing clear and contribute to vulnerability and inequality.

TOPIC ONE: CONCERNS OVER CIVIL AND HUMAN RIGHTS VIOLATIONS

Energy development is possible without infringement of civil rights and human rights.³ It is our hope that our current energy systems will take into account vulnerable and marginalized communities who may be impacted by developments and that this will be influence when production, processing, and transportation projects are undertaken. Specific civil rights concerns for Union Hill (Buckingham County), in Native American territories, and in rural counties along the pipeline path, are discussed in detail in subsequent sections below.

A controversial aspect of pipeline construction in Virginia involves interpretation of public good for property takings under eminent domain. There is considerable activity in local, state and federal courts and examination of current policies appears necessary and should involve public input.

In counties with pipeline surveying and pre-construction, many property owners assert their property rights are violated and they are mistreated during forced entry. There are a growing evidence of stressful and sometimes traumatic encounters in recorded videos, photographs, and other documentation. There is also a lack of certainty about landowner rights, since eminent domain taking is negatively viewed by most landowners. Stress is amplified by concerns over property value and the potential for a negative impact on public health. Homeowners who may feel that their quality of life has been negatively impacted may be unable to find a buyer, if they wish to leave.

Recommendations:

- 1) We recommend that the Governor's office examine the role of state agencies to ensure that policies with the potential to negatively impact vulnerable communities take the health of those residents into consideration as policies are considered for implementation.

TOPIC TWO: PUBLIC HEALTH CONCERNS WITH COMPRESSOR STATIONS AND RACISM IN THE SITING DECISION FOR ACP CS-2 IN UNION HILL

ACP construction requires three compressor stations: one is located within Virginia and the other two are located near to the state's border. MVP construction has the potential to contribute additional emissions to the existing Transco Pipeline Zone 5 Compressor Station 165 in Pittsylvania County, Virginia.

³ Sovacool, B.K. and Dworkin, M.H. 2015. Energy justice: Conceptual insights and practical applications. *Applied Energy*. 142: 435-444.

The Council would like to highlight the potential for disproportionate impact for this community of Buckingham. For federal permitting, ACP used countywide statistics of 29.1 people per mile. We are informed by the community that nearly all the 99 households living within two miles of CS-2 were not taken into account within the FERC application. The majority (85%) of these households are African American, which is also much higher than the county average reported in the federal application. We believe these citizen concerns are warranted. Table 1 demonstrates annual releases from the proposed >53,000 horsepower compressor station, which would receive gas not only from the ACP, but also from the William's Transcontinental (Transco) Pipeline and its feeder lines. These emission levels are based on information available in the 2015 permit application and 2017 supplement. At the ACEJ meeting on May 30, 2018, we were informed of a new air permit application for ACP CS-2 for which the details were recently made available at:

<https://www.deq.virginia.gov/Programs/Air/BuckinghamCompressorStationAirPermit.aspx> a.

Impacted populations will need sufficient time to consider technical applications. During the 30-day comment period, if abundant public health concerns about emissions arise, the state should consider a delay in providing permits until an independent review can take places.

Table 1: Proposed Annual Releases from CS-2

| Pollutant | Annual Air Releases Requested in the 2018 Air Permit Application | Public Health Implications of Pollutants (https://www.epa.gov/criteria-air-pollutants) |
|---|--|--|
| Nitrogen Oxides (NOx) | 43.4 tons | Inflammation of the airways, decreased lung function, increased risk of respiratory conditions, and increased response to allergens. |
| Carbon monoxide (CO) | 51.6 tons | Vital organs, such as the brain, nervous tissues and the heart, do not receive enough oxygen to work properly; people have trouble concentrating, lose coordination, and feel tired. |
| Volatile Organic Compounds (VOCs) | 7.69 tons | VOCs can irritate the eyes, nose and throat, can cause difficulty breathing and nausea, and can damage the central nervous system as well as other organs. |
| Particulate Matter (PM) | 43.2 tons | Exposure to PM can lead to premature mortality, aggravation of respiratory and cardiovascular disease, decreased lung function growth, exacerbation of allergic symptoms, etc. |
| Sulphur Dioxide (SOx) | 8.30 tons | Exposure to SO ₂ can harm the human respiratory system and make breathing difficult; SO ₂ contributes to acid rain. |
| Carbon dioxide equivalent (CO ₂ e) | 295,686 tons | Contribute to climate change with related health impacts, such as increases in distribution and/or intensity of mosquitoes and ticks, allergens, natural disasters, etc. |
| Methane | 70.9 tons | Methane is a potent greenhouse gas; methane gas exposure can cause headaches, dizziness, weakness, nausea, vomiting, and loss of coordination. |
| Hazardous Air Pollutants (HAPs) | 5.3 tons | More than 30 HAPs (e.g., arsenic, benzene, toluene, xylene, etc.) would be released from the proposed compressor station. The levels of formaldehyde and hexane are significant. Formaldehyde: irritation of the skin, eyes, nose, and throat. High levels of exposure may cause some types of cancers. Hexane: dermatitis |

| | | |
|--|--|---|
| | | and irritation of the eyes and throat occur with acute and ongoing exposure |
|--|--|---|

State decisions for infrastructure with significant social and ecological risks, like compressor stations, should not be made hastily, particularly in places like Union Hill where the everyday experiences of residents are shaped by historical experience of racial injustice for a population whose ancestry is rooted in slavery.

During public testimony provided by Buckingham residents, the potential benefits to landowners of the compressor station site when contrasted with potential property value losses for the Freeman Community of Union Hill presents a stark contrast. The slave cemetery on the former Variety Shade Plantation lacks official protection as a historical site. Yet residents regard it as such and received formal recognition in 2016 by Preservation Virginia, a nonprofit who has specialized in Virginian historical preservation for more than a century. In 2017, Union Hill initiated a process for state recognition by filing paperwork with the Department of Historic Resources.

In rural counties in the path of the ACP and MVP pipelines, there is widespread concern that residents shoulder disproportionate risks because of their rural residency. For example, MVP selected to not add the chemical odorant (Mercaptan) as an emergency alert to nearby citizens if a leak occurs, a common precaution in urban areas. Rural populations may not benefit from the pipeline gas, so the absence of protections similar to those provided to urban residents seems unfair given the lack of benefits to balance the potential harms.

Specific examples below go further to suggest discrimination against rural populations based on low population density. For example, the planned width of the pipeline walls is thinner than what would be used if the pipes were located in urban areas. The number of cut-off valves is reduced to cut construction costs, sending a message that rural lives value less.

Federal standards allow emergency responsibility to be placed with the Buckingham First Responders. Since this area is zoned for agricultural and residential use, the compressor required a Special Use Permit. Buckingham County First Responders are inadequately prepared for industrial explosions, leaks, and fires. As proposed, a brief training financed by the ACP with an annual refresher may not adequately assure safety.

Alarming, monitoring of CS-2 will occur remotely from West Virginia with on-site supervision only during week days for the first year. Control of the station with highly pressurized and toxic materials will occur by Wi-Fi tower transmission, in spite of the potential for disruption by storms and other hazards. Less risky fiber-optic cables are more reliable. With these cost-savings measures that do not employ existing technology, it seems inaccurate to define the CS-2 as 'using Best Available Technology' as suggested by the owner and operator during permit applications.

Recommendations:

- 1) We recommend that the Governor encourage state agencies complete comprehensive social, ecological, and comprehensive health impact assessment for CS-2 based on local

- demographic context.⁴ We also recommend that testing occur to assure CS-2 noise levels no higher than 55 decibels (daytime) and 40 decibels (night) and explore protocols to limit the number of blowdowns of CS-2 in addition even further (currently ~10 per year) in addition to adding silencers.
- 2) DEQ's comprehensive Air Dispersion Models for the three ACP compressor stations and for emission increases to Pittsylvania Compressor station due to the MVP should include acute emissions in addition to annual averages. Annual averages can mask short term exposures that may be high enough to have an adverse impact on human health. We recommend that emission information be shared with the impacted community in a public forum with opportunities to ask questions.
 - 3) We recommend that the Governor encourage state agencies to work with ACP to complete a Quantitative Risk Assessment (QRA) for CS-2 to protect the health and well-being of local populations and to examine emergency response plans for deficiencies.
 - 4) We recommend that the Virginia Department of Health train a current staff member or hire an existing expert to build capacity and knowledge within the state about the potential health impacts of gas infrastructure.

TOPIC THREE: MARGINALIZED GROUPS AND CULTURAL RESOURCES

Federal cultural resource assessments for the ACP and the MVP have not adequately incorporated African American and Native American histories. There are important historical sites along the routes of the pipelines that have not received protected or landmark status.

Native American tribes in the state of Virginia are increasingly recognized on state and federal levels. On January 29, 2018, there was long overdue federal recognition of the Chickahominy, Eastern Chickahominy, Upper Mattaponi, Rappahannock, Nansemond, and Monacan Nations. ACP and MVP consultation with tribes was woefully inadequate during FERC permitting, particularly since federal recognition occurred after FERC approval. State agencies have an opportunity to fill this regulatory gap before issuing permits. Tribal leaders at a federal level have communicated a preference to consult with government intermediaries rather than negotiate directly with energy companies.⁵ Tribes may not want to share locations of cultural resources, such as burial grounds and spiritual sites.

The MVP cultural resource plan was incomplete, and the risks are high. In Virginia, the MVP identified 138 pre-historic and historic sites within a mile and 97 within 0.5 mile. There are 8 sites of an unknown time period, suggesting these have not been adequately studied. The 97 sites within a half mile of the project had not been evaluated for their potential to be eligible to the National Registry of Historic Places (NRHP) before MVP made their cultural resource plan in 2015. MVP noted there were "cemeteries, many not mapped, related to Native Americans, enslaved African Americans, and Euroamericans (including possible Civil War-era burials) that may be in the path of the Project."⁶

⁴ For example, Dr. Lakshmi Fjord, an Anthropologist at the University of Virginia, has collected household data in the 2-mile blast radius of CS-2.

⁵ Lovells, H. 2017. The Federal Energy Regulatory Commission Issues Guidelines for Reporting on Cultural Resources Investigations for Natural Gas Projects: A Summary of the Tribal Engagement Provisions <https://www.ldsupra.com/legalnews/the-federal-energy-regulatory-82749/>.

⁶ Mountain Valley Pipeline. 2015. Resource Report 4: Cultural Resources.

The ACP will uncover Native American settlements or artifacts during construction across hundreds of miles on the lands and along rivers of Powhatan, Monacan, Meherrin, Tuscarora, Nottoway, Cheroenhaka, Nansemond, Lumbee and other nations.⁷ ACP's scattershot dispersal technique to share project information covered mostly non-impacted groups in states other than Virginia. ACP received input from a small number of groups, perhaps due to inadequate consultation techniques relying largely on two form letters and a singular multi-tribe information sessional.

The ACP Pipeline and Compressor Station Two (CS-2) are in the immediate vicinity of slave cemeteries, historical school and churches at the Freedman settlement in Union Hill in Buckingham County. The ACP has not undertaken required Section 106, Historic Preservation Act cultural resource reports for the former Slave/Freedmen community of Union Hill. The ACP does not recognize Union Hill's historical importance and current Freedmen descendant population.

The ACP intersects 140 acres of the Great Dismal Swamp (GDS) (National Wildlife Refuge). ACP is a site of ecological diversity and an important historical area. In the early 1600s, Native Americans fleeing the colonial frontier took refuge in what would become GDS. Details about Native American sites in this area remain incomplete. GDS was a survival oasis, a "thriving refuge" for escaped slaves.⁸ In 2003, the Underground Railroad Network to Freedom Program established a refuge to commemorate the importance of the Great Dismal Swamp as an escape route and place of safety for former slaves. There are active archeological sites in portions of the GDS. Thousands of artifacts have been uncovered, but many areas remain without analysis.⁹

Recommendations:

- 1) With hundreds of archeological sites located with a mile of the ACP and the MVP without historical designation, we recommend that the Governor assess the potential impacts of the ACP and MVP on areas of cultural significance to Native Americans and African Americans, to protect and categorize important cultural sites.
- 2) We recommend that the Governor insure that private and public sector entities improve channels of communication with tribal councils while supporting self-determination. In particular, infrastructure projects like the ACP and MVP should consult tribes about impacts to their land and people. Since tribes were awaiting decision on their federal recognition application, they may not have felt free to communicate concerns about proposed pipeline projects. The global standard established to respect indigenous rights is Free, Prior and Informed Consent. These pipeline projects are currently in pre-construction without FPIC, even from federally recognized tribes.

TOPIC FOUR: STATE REVIEW UNDER THE CLEAN WATER ACT

⁷ Native Land. Our home on native land. <https://native-land.ca/>.

⁸ Grant, R. 2016. Deep in the swamps, Archeologists are finding how fugitive slaves kept their freedom. *Smithsonian Magazine*. <https://www.smithsonianmag.com/history/deep-swamps-archaeologists-fugitive-slaves-kept-freedom-180960122/>.

⁹ Hausman, S. 2014. Fleeing to Dismal Swamp, slaves and outcasts found freedom. *National Public Radio*. <https://www.npr.org/2014/12/28/373519521/fleeing-to-dismal-swamp-slaves-and-outcasts-found-freedom>

ACEJ recognizes clean water is part of the public trust. UN Resolution 64/292, passed in 2010, acknowledged that clean drinking water is essential to the realization of all human rights. Several United States acts, including the Clean Water Act and the Safe Drinking Water Act, protect access of American citizens to clean drinking water. Disruption or contamination of water supply is an environmental justice issue because low-income populations can least afford to purchase water or filtration systems and cannot pay higher taxes for improved infrastructure.

To assure water quality, ACEJ recommends that the state of Virginia review federally permitted projects like the ACP and the MVP to certify that they will comply with state water standards. Pipeline construction will involve crossing 1,556 waterbodies and impact large areas of the state. Based on the best available information, the ACP would cross near intakes of water assessment areas of the (1) City of Staunton-Middle River, (2) City of Norfolk-Western Branch Reservoir, (3) City of Norfolk-Lake Prince, and (4) City of Emporia-Meherrin River.¹⁰ The MVP would cross two source water assessment areas: (1) Western Virginia Water Authority-Spring Hollow, and (2) Town of Rocky Mount-Blackwater River.

Individualized analysis of current conditions and expected impacts is important at every crossing, but especially in areas where water quality is already impaired, in areas of seismic activity or geologic instability, and in zones that are sources of drinking water. In rural areas like Bath, Buckingham, and Nelson Counties, where residents rely on wells, streams, rivers, and reservoirs, citizens are worried and alarmed about potential groundwater pollution from pipeline construction and use.

Independent Geographic Information System (GIS) analysis has identified that the proposed pathway is in proximity to stream crossing and water intakes;¹¹ therefore we recommend state agencies conduct environmental justice review of impacts on water bodies to assure risk to water is carefully assessed. The ACP would cross the Blackwater River approximately 4.5 miles from the City of Franklin (Southampton County). Of the 33 HDD water crossings within two miles of Franklin, most lie proximate to neighborhoods with a majority of people of color.¹²

The legal and regulatory record below suggests the potential for significant ecological harm and the need for additional state review:

- MVP: The DEQ has taken enforcement action against MVP since the start of pre-construction.¹³ Federal regulators halted MVP construction in August of 2018 due to

¹⁰ Hansen, et al. 2018. Threats to Water Quality from the Mountain Valley Pipeline and Atlantic Coast Pipeline Water Crossings in Virginia. https://www.nrdc.org/sites/default/files/threats-to-water-quality-from-mountain-valley-pipeline-and-atlantic-coast-pipeline-water-crossings-in-virginia_2018-02-26.pdf.

¹¹ Detailed route maps are available at the [Pipeline Compliance Surveillance Initiative \(CSI\)](https://dpmc-gis.maps.arcgis.com/apps/webappviewer/index.html?id=bad99995a7674146903a3aacb83bd879). See in particular <https://dpmc-gis.maps.arcgis.com/apps/webappviewer/index.html?id=bad99995a7674146903a3aacb83bd879>; Hansen, et al. 2018. Threats to Water Quality from the Mountain Valley Pipeline and Atlantic Coast Pipeline Water Crossings in Virginia. https://www.nrdc.org/sites/default/files/threats-to-water-quality-from-mountain-valley-pipeline-and-atlantic-coast-pipeline-water-crossings-in-virginia_2018-02-26.pdf.

¹² Ibid.

¹³ DEQ. Regulatory activities related to the Atlantic Coast and Mountain Valley pipelines in Virginia. https://www.deq.virginia.gov/lists/?action=show_list&id=38&page=1; Lopez, T. 2018. DEQ, MVP broke the

repeated incidents of erosion violations.¹⁴ In August of 2018, the Fourth Circuit Courts vacated the Forest Service and Bureau of Land Management permits for the MVP due to evidence of insufficient environmental review before approval.¹⁵

- ACP: Along with dozens of local organizations, the Southern Environmental Law Center submitted a legal case in 2017 requesting rehearing of FERC review given limitations in review prior to approval. While this court decision is still pending, Senator Kaine has repeatedly requested a new FERC review.¹⁶ ACP has since been cited for erosion violation in West Virginia¹⁷ and violations of tree felling in Virginia.¹⁸ ACP pre-construction was halted in May of 2018 to protect endangered species when protections were found insufficient.¹⁹ In August of 2018, the Fourth Circuit Court vacated National Park Service permit for the ACP due to the permit's fundamental contradiction with the NPS mission.²⁰

Recommendations:

- 1) We recommend that Governor communicate with the State Water Board (SWB) and the Department of Environmental Quality (DEQ) about state review power under Section 401 of the Clean Water Act to assure necessary site-specific assessment.
- 2) We recommend that the Governor embrace site-based stream-by-stream assessment to protect Virginia citizen's right to clean water and ensure safeguards are in place for low-income and vulnerable populations.
- 3) We recommend that the Governor delay MVP pipeline pre-construction and construction until the potential impacts can be more thoroughly reviewed with disproportionate impacts taken into consideration. We also recommend that the state exercise state

law, has inadequate erosion controls. WSLs 10 News. <https://www.wsls.com/news/virginia/deq-mvp-broke-the-law-has-inadequate-erosion-controls>.

¹⁴ Hammack, L. 2018. Federal agency order stop on the entire Mountain Valley Pipeline. *The Richmond Times Dispatch*. https://www.richmond.com/news/virginia/updated-federal-agency-orders-work-to-stop-on-the-entire/article_47640162-9399-5ca1-81b5-4d38be2417a4.html.

¹⁵ Weber, M. 2018. US Court vacates US Forest Service and BLM permits for Mountain Valley Pipeline. *S&P Global Platts*. <https://www.spglobal.com/platts/en/market-insights/latest-news/natural-gas/072718-us-court-vacates-us-forest-service-blm-permits-for-mountain-valley-pipeline>.

¹⁶ Kaine, T. 2018. Kaine calls for FERC rehearing on Mountain Valley and Atlantic Coast Pipelines. <https://www.kaine.senate.gov/press-releases/kaine-calls-for-ferc-rehearing-on-mountain-valley-and-atlantic-coast-pipelines>.

¹⁷ Miskin, K. 2018. WV DEP pipeline developers failed to control erosion, fail the water quality rules. *WV Gazette Mail*. https://www.wvgazettemail.com/news/wvdep-pipeline-developers-failed-to-control-erosion-follow-water-quality/article_70da3076-0ec4-531f-b4bd-7d3f2b2c1fb0.html.

¹⁸ Zullo, R. 2018. Atlantic Coast Pipeline gets violation notice from state over tree felling. *The Richmond Times Dispatch*. https://www.richmond.com/news/virginia/atlantic-coast-pipeline-gets-violation-notice-from-state-over-tree/article_cde8db97-2e9a-58fa-ad09-93a1ff643ed2.html.

¹⁹ Zullo, R. 2018. Federal appeals court nullifies key permit of the Atlantic Coast Pipeline. *The Richmond Times Dispatch*. https://www.richmond.com/news/virginia/federal-appeals-court-nullifies-key-permit-for-atlantic-coast-pipeline/article_c3da09e8-df8d-56d5-a9dd-3499737b1a14.html.

²⁰ Lavoie, D. 2018. Appeals Court Tosses Key Permits for Atlantic Coast Pipeline. *The Washington Post*. https://www.washingtonpost.com/national/energy-environment/appeals-court-tosses-key-permits-for-atlantic-coast-pipeline/2018/08/06/63064dfa-99ca-11e8-a8d8-9b4c13286d6b_story.html?noredirect=on&utm_term=.2f28ca0c4875

authority under SB698 and SB699 to delay construction until this review has taken place.²¹

TOPIC FIVE: METHANE GAS, CLIMATE CHANGE, SEA LEVEL RISE

Methane (CH₄), a potent greenhouse gas, leaks into the earth's atmosphere through the production of gas pipelines across the US.²² Gas systems contribute to climate change more than coal and methane emissions are on the rise. A recent NASA study concluded that fossil fuel development is the source of approximately 68% of the recent rise in methane levels in the atmosphere.²³ The potential cumulative impacts of new gas infrastructure are significant.²⁴

Virginians are already experiencing climate change impacts, such as heat waves, seasonal drought, sea level rise, and intensification of storms. Climate disruption often exacerbates inequalities, creates and reinforces environmental injustice, and causes the greatest harm to poor and vulnerable populations.²⁵ Climate justice advocates assert harm from climate change disproportionately affects communities of color, low-income populations, and the elderly and children. Sea level rise and recurrent flooding are contributing to missed school and work in low-lying areas of the eastern shore and coastal zones (i.e., in Norfolk).²⁶ Hampton Road owners have lost homes when they can no longer obtain or afford flood insurance.²⁷ The perception that low income residential areas and communities of color may not receive equal attention when evacuation and storm recovery plans are made, influences the recommendations made below. Due to recurrent flooding, a percentage of the low-income populations from Tidewater Garden and other public housing projects in Norfolk are to be relocated to new housing through a voucher system by 2020.²⁸ In addition to demonstrating inequality in housing access, climate impacts draw attention to Virginia's unequal medical coverage and to existing gaps in health care access. Climate change can result in increases in pollen and earlier rises in pollen contributing to allergies, increase in vector borne diseases from increases in the populations of ticks and mosquitos, higher potential for heat stroke,

²¹ <http://lis.virginia.gov/cgi-bin/legp604.exe?181+sum+SB698>; <http://lis.virginia.gov/cgi-bin/legp604.exe?181+cab+SC10205SB0699+RCSB3>.

²² Brandt, A.F. et al. 2014. Methane Leaks from North American Natural Gas Systems. *Science*. <http://science.sciencemag.org/content/343/6172/733>

²³ NASA (National Aeronautics and Space Administration). 2018. NASA-led study solves methane puzzle. <https://www.nasa.gov/feature/jpl/nasa-led-study-solves-a-methane-puzzle>.

²⁴ Mayfield, D. 2017. Would the Atlantic Coast Pipeline increase the threat of sea level rise in Hampton Roads? *The Virginian Pilot*. https://pilotonline.com/news/local/environment/article_a949fc72-c07b-5d08-a329-463b1eee32f1.html

²⁵ *United Nations News*. 2016. Inequalities Exacerbate Climate Impacts on Poor and Vulnerable Populations. <https://news.un.org/en/story/2016/10/541743-inequalities-exacerbate-climate-impacts-on-poor-vulnerable-populations-new-un>; Leichenko, R. and O'Brien, K. 2008. *Environmental change and globalization: Double exposures*. Oxford University Press.

²⁶ Kusnetz, N. 2018. Norfolk wants to remake itself as sea level rises, but who will be left behind? *Inside Climate News*. <https://insideclimatenews.org/news/15052018/norfolk-virginia-navy-sea-level-rise-flooding-urban-planning-poverty-coastal-resilience>.

²⁷ Jarvis, B. 2017. When rising seas transform risk into certainty. *The New York Times*. <https://www.nytimes.com/2017/04/18/magazine/when-rising-seas-transform-risk-into-certainty.html>.

²⁸ The New Journal and Guide Staff. 2018. Norfolk's urban renewal program gets underway. *The New Journal and Guide*. <http://thenewjournalandguide.com/norfolks-urban-renewal-project-gets-underway/>.

increase in ground level ozone, all of which combine to intensify health conditions such as asthma, other respiratory diseases, and more.²⁹

An important component of environmental justice is mitigating and preventing releases of methane and other greenhouse gases. Reducing methane emissions is especially important for curbing near-term warming. Because methane only lasts for a decade or so in the atmosphere, reducing emissions can have a near-immediate impact on slowing the rate of warming, which is critical for reducing the impacts that we are already seeing, such as sea level rise and worsened extreme weather events.³⁰

Recommendations:

- 1) We recommend that the Governor direct state agencies model greenhouse gas contributions, including methane, of the proposed ACP and MVP comprehensively so the decision-makers and the public have a more accurate understanding of climate impacts.
- 2) We recommend that the Governor ensure that the state includes GHGs in state assessments and should consider rejecting permits for the ACP and the MVP if climate impacts surpasses other energy options. The New York Governor and state resource agencies canceled proposed gas infrastructure using climate justifications, creating a precedent for state level action.³¹
- 3) We recommend that the Governor rigorously work with governmental and independent agencies to revisit initial economic and other calculations related to gas pipelines. Market shifts suggest there may not be a need for additional capacity given the decreasing domestic demand. This will ensure that low income and minority populations are not disproportionately impacted by the proposal and to assess the potential for comprehensive ecological impacts thoroughly.

²⁹ Natural Resources Defense Council. Climate change and health in Virginia. <https://assets.nrdc.org/sites/default/files/climate-change-health-impacts-virginia-ib.pdf>.

³⁰ Ooko, I. 2018. New Science Suggests Methane Packs More Warming Power Than Previously Thought. *Environmental Defense Fund*. <http://blogs.edf.org/energyexchange/2018/02/07/new-science-suggests-methane-packs-more-warming-power-than-previously-thought/>; Howarth, R.W. 2015. Methane emissions and climatic warming risk from hydraulic fracturing and shale gas development: implications for policy. *Energy and Emission Control Technologies*. 3: 45-54.

³¹ Kuznetz, N. 2017. Another pipeline blocked for failure to consider climate emissions. *Inside Climate News*. <https://insideclimatenews.org/news/07092017/new-york-pipeline-permit-rejected-natural-gas-valley-lateral-ferc-climate-change>.

CONCLUSION: OUR PROPOSAL

Virginia's Emergency Task Force on Environmental Justice in Gas Infrastructure

ACEJ recommends an **Emergency Task Force on Environmental Justice in Gas Infrastructure** be convened to assess evidence of disproportionate impacts for people of color and for low-income populations due to gas infrastructure expansion. ACEJ recommends that the Governor direct DEQ to suspend the permitting decision for the air permit for the Buckingham compressor station pending further review of the station's impacts on the health and the quality of life of those living in close proximity. We also recommend that a review of permitting policies and procedures take place and that the governor direct the Air Pollution Control Board, DEQ, and DMME to stay all further permits for ACP and MVP to ensure that predominately poor, indigenous, brown and/or black communities do not bear an unequal burden of environmental pollutants and life-altering disruptions. These actions would ensure that environmental justice has meaningful influence in all current and future energy projects.

Proposed Membership:

- State of Virginia: appropriate agencies (i.e., DEQ, VDH, DSS, DMAS, SHPO, etc.)
- Dominion Energy: Environmental Justice Officer or other representative, company archeologist
- Advisory Council on Environmental Justice (ACEJ) representatives
- Impacted urban and rural populations, including members of Native American nations and Freedman communities
- Civil rights attorneys
- Member of State Control Water Board (selected by SWCB)
- Member of State Air Pollution Control Board (selected by PCB)
- Academia: anthropologists, archeologists, historians, geographers

Appendix 2

To: Governor Northam
From: Advisory Council on Environmental Justice
Re: Public Comment and Resolution regarding Union Hill Compressor air permitting process and ACP Pipeline.
Date: September 3, 2018

Dear Governor Northam:

At the recent meeting of the Advisory Council on Environmental Justice held in Richmond, VA on August 28th, 2018, a resolution was passed in support of a request made during the public comment period. The Virginia residents asked for the following:

1. Extend the public comment period for the Union Hill Compressor station air permit to 60 days.

In addition, there were concerns expressed which are consistent with comments reflected in our letter to you dated August 16th which highlight the need for a more thorough assessment of risks and potential health impacts associated with the Compressor station and ACP pipelines. We respectfully make this request.

The following quote from our August 16th letter to you describes the underlying issues. "Many of Buckingham's residents, because of their race or color, have been the historical recipients of unequal treatment, for which the above-listed Executive Order was signed to serve as a remedy. Therefore, we encourage that these recommendations (and others that may be directed to the Governor from this Commission in the future) be viewed through this lens so that the state of Virginia can ensure policies, programs and practices will not have unintended consequences that harm citizens who have a history of disenfranchisement".

Appendix 3



VIRGINIA ENVIRONMENTAL JUSTICE COLLABORATIVE
220 Hull Street, Richmond, VA 23224
www.vaejc.com
804.370.1143

September 10, 2018

Dear Governor Northam, Senators Warner and Kaine, Virginia State Legislators
cc: Federal Energy Regulatory Commissioners, Dominion Resources, Meryem Karad, Trieste
Longwood (DEQ)

We are alarmed civil rights, community-based, environmental, and faith-based organizations who make up the Virginia Environmental Justice Collaborative (VEJC), along with institutional partners, civil rights advocates, consumers, impacted residents, and frontline marginalized communities throughout the Commonwealth. Environmental justice is falling through the cracks because each federal or state agency limits its permitting and regulatory authority to fragmented fields of expertise (air *or* water; air *not* safety or noise pollution).

This approach excludes comprehensive study of the cumulative risks and hazards faced by impacted residents, and supports denial of responsibility for environmental justice implementation. Thus, EJ communities remain targets for new burdens of toxic infrastructure in Virginia. Travesties in two of these communities have prompted this letter and our strong recommendations for immediate actions by you.

The Environmental Protection Agency (EPA) defines environmental justice as the fair treatment and meaningful involvement of all people regardless of race, color, national origin, or income with respect to the development, implementation, and enforcement of environmental laws, regulations, and policies. NEPA guidelines detail how to implement environmental justice reviews, including:¹

¹ https://www.epa.gov/sites/production/files/2016-08/documents/nepa_promising_practices_document_2016.pdf

- ❖ Identification and assessment of environmental justice communities using multiple methods, including inclusive local sources to ensure accuracy;
- ❖ Early, meaningful, inclusive, participatory engagement of impacted communities;
- ❖ Identification and protection of African American, Native American, and other cultural and historical resources;
- ❖ Comprehensive analysis of the cumulative impacts of air, soil, and water exposures and their combined risks to human health over time, with particular emphasis on vulnerable populations – elderly, pediatric, minority, and low-income residents;
- ❖ Assessment of pre-existing medical conditions of fence-line neighborhoods;
- ❖ Equitable access to alternative energy and green infrastructure to reduce toxic burdens.

Virginia Energy Policy (Code of Virginia § 67-101) energy objectives include “[developing energy resources and facilities in a manner that does not impose a disproportionate adverse impact on economically disadvantaged or minority communities.”² In 2017, Governor Terry McAuliffe created the Governor’s Advisory Council on Environmental Justice (ACEJ) under Executive Order #73, to provide “a consistent, action-oriented approach to incorporating environmental justice into decision-making.” Governor Northam’s Executive Order #6 includes: “Engaging the regulated community, local governments, and other interested stakeholders in the development of new protocols”; and, “assessing gaps in DEQ resources or authorities necessary to address challenges identified under this review.”

These commitments by Virginia to resolve the environmental and social injustices identified below demand that energy generation choices give highest priority to the health and safety of the public through equitable access to community-oriented renewable energy.

Buckingham Environmental Justice Review

Union Hill is not suitable for a gas compressor station because of geometric comprehensive and cumulative impacts to air, soil, and 100% of drinking water sources with:

- ACP Intersection with existing 4-pipeline William’s Transcontinental (Transco) at the Union Hill Compressor Station in a large wetlands close to water wells, homes, churches;
- A proposed 54,000+ horsepower compressor station is sited for a majority African American community over 500% more populated than reported by Atlantic Coast Pipeline (ACP) and the Federal Energy Regulatory Commission (FERC),
- ACP’s horizontal directional drilling at a seasonal flooding, seismic faultline site under the James River risks entire watershed drinking water;
- ❖ The African American Freedman community of Union Hill lacks historical preservation of historic black schools, churches, slave burials, and gathering places;

² <https://law.lis.virginia.gov/vacode/title67/chapter1/section67-101/>

- ❖ According to state data and household studies, pre-existing health conditions in proximate households include asthma, chronic bronchitis and other lung disorders, heart disease, diabetes, cancers, and autoimmune conditions;
- ❖ Residents of Union Hill are disproportionately elderly and very young; in all public comment processes impacted residents give strong dissent with specific data for why not to allow a large compressor station in a minority, Freedmen community;
- ❖ Emergency first response infrastructure in Buckingham is inadequate for industrial scale leaks, fires or explosions.³

We request a 30-day extension of the 30-day comment period for the draft air permit for Union Hill Compressor Station because:

- ❖ Community members received access to large documents only weeks before the comment period is set to end; unlike ACP's developer, they did not receive DEQ expert technical support to frame the technological and emissions issues DEQ staff said are the only issues they will read and summarize in public comments;
- ❖ Yet, the lack of organization, lack of tables, and overall impenetrable language in hundreds of pages of the air permit and air modeling require the same level of support Dominion received from DEQ to comprehend;
- ❖ The lack of access to computers and internet by the Union Hill community, coupled with lack of access to rural wifi or broadband infrastructure, compounds inequity.

Chesapeake Environmental Justice Review

Likewise, the Chesapeake and Norfolk lateral pipeline route and process are not appropriate:

- ❖ The siting of a new lateral gas pipeline route in Chesapeake and Norfolk demonstrates targeted impact to majority African American neighborhoods. Many residents purchased homes in these neighborhoods in the late 1960's - early 1970's when other neighborhoods were redlined and they were prohibited from buying elsewhere. Now, those same residents are seniors and unable to move without losing their lifelong investment while others who are able are selling their homes which could still reduce home values;
- ❖ A coalition of Chesapeake subdivisions commissioned a professional environmental study at their own expense. The report determined that should there be an explosion, there are hundreds of homes within potential blast zone.
- ❖ New pipeline is being constructed in a neighborhood that is already in nonattainment for air and water standards⁴ with proximity to superfund sites tied to military installations⁵

³ Based on household surveys, Union Hill has a suburban population density. It is cited incorrectly in project documents as rural.

⁴ https://pilotonline.com/news/government/local/article_33929ed5-ed53-5d7e-8623-35e70d26c6bb.html

and to Chesapeake Energy Center's unlined storage ponds with 3 million tons of coal ash leaching arsenic into groundwater.⁶

- ❖ In order to expedite construction, company officials rushed eminent domain property takings; impacted landowners were improperly informed and offered inadequate compensation;⁷
- ❖ Six public schools - including three elementary schools - lie within the incineration/blast zones of the gas pipelines currently under construction; **the School Board was not aware of the plans until community members voiced their concerns at a recent school board meeting well after construction was already underway. To date, parents of students have still not been notified; and**
- ❖ Community members have not been adequately informed about both its existence and the known risks of gas pipelines and their construction hazards: residents generally thought the new pipes are water lines or infrastructure without risk of explosion.⁸

For these two EJ communities, we recommend Governor Northam immediately create: An Interagency Task Force with involvement of impacted residents to look at and take actions to reduce or avoid the comprehensive impacts of the lateral and ACP pipelines and the Virginia ACP compressor station, since no existing agency has authority to address cumulative air, water, and land releases and exposures; to divide and oversee completion of these tasks:

1. Undertake: a. Quantitative Risk Assessments (QRA), b. Comprehensive Health Impact Assessments (CHIA), and c. Statements of Impact which taken together address the environmental justice, public health and safety, and cumulative hazards faced by residents of Buckingham (Appendix 1) and Chesapeake;
2. Extend the comment period for the Union Hill Compressor Station air permit to 60 days;
3. Require Dominion Energy to allow Union Hill community representative(s) to enter the Union Hill Compressor Station site to locate unmarked slave burial gravesites and to have gravesites and other archaeological resources surveyed by an independent or public surveyor for the purposes of historic preservation;
4. Undertake and make public baseline analyses of present drinking water, ambient air, transportation and existing health in these communities; and make that data available to the public without incurring delays and costs of FOIA;
5. Immediately notify parents of public school students at schools located in the blast radius of the Chesapeake lateral connection and Union Hill compressor station, and address concerns they raise; and

⁵<https://response.restoration.noaa.gov/about/media/chesapeake-bay-overcoming-unique-challenges-bringing-restoration-polluted-military-sites>

⁶<https://www.wavy.com/news/local-news/chesapeake/appeals-court-hears-chesapeake-coal-ash-storage-case/1066322252>

⁷ https://pilotonline.com/news/local/article_35553a50-cc46-5e36-bfaf-79cd77cf2b9d.html

⁸ PHMSA records annual pipeline incidents, including fatalities and costs.
<https://hip.phmsa.dot.gov/analyticsSOAP/saw.dll?Portalpages>

6. Require developer-funded bonds for both projects to be held in escrow for Impacted Families to apply for direct assistance who experience any adverse health, mortality, economic, educational impacts or true market relocation costs.

For all infrastructure projects, we recommend :

1. Meaningful participation by impacted populations in permitting and monitoring including effective responses to citizen concerns as per Exec. Order #6;
2. Evaluation of climate and environmental justice impacts in all state policies, programs, and permits;
3. Reduction of state disparity in exposure by which black and brown communities disproportionately experience harm from toxic air, unsafe water, and public safety risks;
4. Development of equitable access to renewable energy sources (Appendix 2)
5. Creation of an interagency Task Force with involvement of impacted residents to look at and take actions to reduce or avoid the comprehensive impacts of the lateral and ACP pipelines and the Virginia ACP compressor station, since no existing agency has authority to address cumulative air, water, and land releases and exposures;

Signatories

Groups

Virginia Environmental Justice Collaborative (by consensus)

Friends of Buckingham

Virginia Interfaith Power & Light

Center for Sustainable Communities

Appalachian Voices

United Parents Against Lead & Other Environmental Hazards

Virginia Organizing

First Alliance Consulting Group LLC.

Sierra Club Virginia Chapter

Buckingham: We The People

Chesapeake Climate Action Network

Water is life. Protect it.

Allegheny-Blue Ridge Alliance

Highlanders for Responsible Development

Interfaith Alliance for Climate Justice

Friends of Nelson

Yogaville Environmental Solutions

Augusta County Alliance

RVA Interfaith Climate Justice League

Mothers Out Front, Hampton Roads

Virginia Pipeline Resisters
Voices from Bath
350 Loudon
RAPTORS VA
Protect Our Water Heritage and Rights (POWHR) Coalition
Preserve Giles
Harrisonburg-Rockingham County NAACP
Sacred Ground Historical Reclamation Project
Virginia Defenders for Freedom, Justice & Equality

Individuals

Swami Dayananda, LOTUS Center for all Faiths, Yogaville, Buckingham
Rev. Dr. Lakshmi Fjord, Friends of Buckingham; Chair: People's Tribunal on Human Rights and Environmental Justice Impacts of ACP and MVP
Queen Zakia Shabazz, Coordinator, Virginia Environmental Justice Collaborative
BeKura W. Shabazz, Founder, First Alliance Consulting LLC
Dr. Mary Finley-Brook, University of Richmond, Richmond
Dr. Irene Leech, Buckingham
Chad Oba, Heidi Dhivya Berthoud, Friends of Buckingham, Buckingham
Alexis Szepeszy, Sierra Club Virginia Chapter
Suzanne Keller, retired epidemiologist
Hanuman, Heidi Dhivya Berthoud, Buckingham: We the People
Robert Dilday and Weston Mathews, Co-Directors Interfaith Alliance for Climate Justice
Ben Cunningham, Blue Ridge GeoGraphics, LLC
Kimberly Williams, Norfolk, VA
Steven Baggarly, Norfolk VA
Stacy Lovelace and Jessica Sims, Co-Directors Virginia Pipeline Resisters
Natalie Pien, Unitarian Universalist Church of Loudoun, Green Team Chair
Jonathan Sokolow, Attorney, Reston, VA
Russell Chisholm, Executive Committee Member of POWHR Coalition, Newport, VA

Appendix 4

Critical Unanswered Questions about ACP/Dominion Energy's Union Hill Compressor Station
For four years, we have tried to get state agencies to answer key questions:
here are 106 unanswered questions

PART 1: Technical Questions for the Air Permit and Permitting Process

Emissions

1. How high are the peak hourly emissions for Hazardous Air Pollutants (HAPs) and Volatile Organic Compounds (VOCs) at Buckingham Compressor Station (BCS)? Minor source is based on annual emissions which are an average but peak emissions can really impact health!
2. Emissions during blowdowns occur in large concentrated plumes of methane and co-pollutants. How much of the emissions from the compressor station will remain in the Union Hill and Woods Corner neighborhoods, and how much will travel beyond? With schools are within 10 miles of the compressor station, how will our children be protected?
3. How far away will pollution from BCS extend and in which direction is it most likely to be carried based on wind and other patterns?
4. According to project description on the Virginia Department of Environmental Quality (DEQ) website, the estimated effect on air quality near the facility from the proposed project is that all emissions will comply with all applicable ambient air quality standards. Please share with us the data documenting the current ambient air quality. What is the difference between the ambient air quality now in the air around the proposed project and what is allowable?
5. Sulfur Oxides (SOx) and Hazardous Air Pollutants (HAPs) emissions seem to be higher in the 2018 permit application when compared to 2017 estimates. How can it be best available technology (BACT) if equipment replacement increases these dangerous emissions?
6. Since the recommended distance between compressor stations is usually less than 100 miles, why is the distance between ACP/Dominion Energy compressors so great, particularly since it concentrates dangerous pollution in the Union Hill and Woods Corner neighborhoods?
7. Why does BCS in Virginia have higher emissions than the ACP compressor stations in West Virginia or in North Carolina? Could the spacing of the stations be regularized to not place the greatest risk at Union Hill?
8. Given that industry standard is to have compressor stations at shorter intervals, distributing risks and hazards more evenly over transmission distances. How does ACP/Dominion Energy explain that they have only one compressor station per state, and therefore these are very large and impactful as needed to provide the pressure to cover 200+ miles between stations?
9. Given the fact that ACP/Dominion Energy has not accurately recorded the actual population living next to the BCS site, how will DEQ address the fact that the low population number used (29.4 people per square mile) allows ACP to use up to 75% less heavy pipes and 500% longer shut off valve distances? For air emissions at BCS alone, that means far greater blowdown contents between shut off valves or 15.6 miles apart.
10. Since greater emissions reductions have occurred at other compressor stations, how can the proposed plan for Union Hill be argued to be BACT?
11. Dominion Energy has expanded other compressor stations after permitting and construction. Can we anticipate that this compressor station will be expanded in the future?
12. Unless the company can be prohibited from expanding in the future, why is this facility not considered a major source of pollution now so stronger standards are applied?
13. Known pre-existing diagnoses at Union Hill, include diabetes, asthma and other lung conditions, chronic bronchitis and pneumonia, heart conditions, breast and other cancers, COPD, lupus, kidney disease, epilepsy, multiple sclerosis, brain tumor, migraines and more. Where are the studies to assure that the passage of the Transco pipeline through this portion of Buckingham is not contributing to these medical conditions? Does analysis of BACT take into consideration at-risk populations?
13. Given that particulate matter (PM) causes respiratory damage and there are technologies available to scrub PM from air emissions, how can ACP/Dominion Energy claim BACT if not scrubbing PM?

14. The air permit application and draft air permit do not discuss exact levels of 30+ Hazardous Air Pollutants (HAPS) but do show they will be emitted from BCS. How can we be confident in DEQ protecting our public health if benzene, toluene, etc. and other HAPS known to cause harm to humans are not limited and are tons of HAPS are allowed to be emitted each year?
15. Residents living proximate to compressor stations often report headaches, dizziness, nosebleeds, skin rashes and other concerning symptoms. The DEQ report states that anticipated pollution will not be not harmful to human health because it is within limits, which is also true for other dangerous compressor stations where people are sick. How can you assure us we will not suffer negative health impacts?
16. Could ACP/Dominion Energy increase the amount of gas compressed in the BCS in the future without additional air permitting?
17. While baseline emission data from Roanoke, Hopewell, and other parts of the state might provide the best available baselines for air modeling, how can we be assured of the accuracy of pollution estimates, when the characteristics of these places are clearly different from Buckingham and DEQ is basing the majority of these pollution estimates on unverified-in-real-life modeling outputs and laboratory testing?
18. DEQ air modeling for the BCS is based on many assumptions about temperature, altitude, and other factors that are not accurate for Buckingham. Why was field data not collected? How can you assure test results and thus pollution estimates are accurate?
19. How do you adjust for seasonal variability when assessing impacts of toxic pollutants on human health? For example, how do you take into account the higher exposure level of emissions that occur during the colder months when they stay closer to the ground?
20. The "emergency" gas turbine, which raises the combined horsepower closer to 57,000 is intended for winter months. How is this accounted for in the air permit? Can we be assured that use of "emergency" is not being used to "hide" higher levels of emissions in winter?
21. Please provide an analysis of the long-term effects of the interaction on the human body of all the emissions that will be released constantly and more so during the blowdowns? Many residents are not able to change residences and will be constantly exposed over many years for 24 hours a day every day of our lives.
22. The state measures National Air Ambient Quality Standards (NAAQS) in annual levels, but the blowdown events ACP/Dominion Energy has in their 2018 air permit application release acute emissions over shorter periods. How can nearby residents be assured their health is being protected when state measurements and regulations are not targeted at the specifics of the actual health risk?
23. How many total blowdowns per year, including all compressors, will there be? We never hear the same number twice for the expected number of blowdowns and discussions with other communities with existing compressor stations revealed that blowdowns occur far more frequently than it appears this permit anticipates.
24. What will be the procedure for providing warnings for scheduled blowdowns? Will nearby residents who have health issues be given sufficient time to leave the area until the pollutants are reduced? How long will they have to plan to be away from the area to protect their health? What conditions might affect that time?
25. From the discussion of the BACT analysis in the permit application, it appears that DEQ has relied on the top-down analysis conducted for other (smaller) sites. Shouldn't DEQ have required the applicant to conduct a fresh top-down BACT analysis since BCS is a larger source than the other compressor stations evaluated for BACT?
26. The SOLAR manufacturer for the compressor turbines does not warranty or guaranty emission reductions in real life will approach levels found in modeling tests. SOLAR suggests any estimates must be treated as a range contingent on local variables. Given this careful language and the direct precaution in the SOLAR's sales materials warning against using their estimates in permitting decisions, why has there not been additional independent verification to assure estimates are accurate for Buckingham's local conditions?
27. Since the new technology ACP/Dominion Energy bases their predicted emissions on has never been tested in the field and is taken from manufacturers' laboratory results under

- generic conditions, is it not the best practice to hold the air permit application until the new technology has been tested in similar situations? For example, some of the proposed emissions controls have only been used with small turbines dissimilar to those proposed for BCS, isn't additional testing and use required before we can trust the manufacturer's claims?
28. At least one of the SOLAR turbines has demonstrated successful use of catalytic combustion technology. This technology has the potential community benefit of reducing the risks associated with the ammonia injection. Did the BACT analysis consider the use of catalytic combustion technology?
 29. Why is it considered appropriate to use Occupational Safety and Health Administration (OSHA) work standards to apply to people exposed in homes? Since most people spend more than 8 hours in their homes each day, how can this be considered a relevant metric to assess home exposure?
 30. ACP/Dominion Energy's BACT claim seems to involve selective capturing of methane, so how could DEQ assure these levels are lower to protect our health and reduce threats from climate change? Methane is 86% more damaging to protective ozone than carbon dioxide. How does DEQ plan to require ACP/Dominion Energy to accurately measure as well as to eliminate the release of methane into our community?
 31. In the face of a climate change crisis, how can DEQ permit the BCS to release nearly 80 tons of methane per year?
 32. Is there the possibility of methane leaking from the BCS or surrounding infrastructure that is unaccounted for in the permit application?

Timing and Format of Permitting Process

33. Why do you not provide more time for public comment since impacted communities do not regularly have internet access when large permit documents are stored as web files? Can you not provide summary tables or other education materials to make content more accessible to impacted communities?
34. Will you extend the comment period for another 30 days beyond September 11 so we have additional time to review documents and prepare comments?
35. Why is the public hearing for this permit being held on the last day of the comment period? This prevents anyone who attends and learns more from making a comment. It also prevents citizens who need time to consider new information from responding after they have time to do this.
36. What is timeline for the public comments to be provided to the Air Pollution Control Board (APCB)? When will the APCB public comments be made available?

Monitoring and Compliance

37. Why do impacted community members have to carry the burden of baseline testing? Will the state compensate residents for the time and money we are investing in baseline testing, since DEQ has not done this necessary work?
38. How can we access data/record-keeping on an ongoing basis to ensure the records that are being kept and so that we can be aware of the accurate quantities of emissions we are being exposed to daily, monthly and yearly?
39. How will we know all of the relevant information is being shared with the public in a timely manner? Polluting companies and state agencies have a checkered history in terms of transparency.
40. Does DEQ plan to establish fenceline monitoring systems to notify local residents when air pollution levels from BCS are unsafe?
41. How monitoring and compliance systems involve impacted community members and use local knowledge to make our system more robust? How can we be assured ACP/Dominion Energy will not be allowed to create a sub-par evacuation process or one that does not fit our rural challenges?

PART 2: Questions Not Covered in the Air Permit Application or Draft Permit

Population

42. Why did Federal Energy Regulatory Commission (FERC) and DEQ not use the actual numbers of homes and residents of Union Hill in BCS permitting applications?
43. Now that it is public knowledge that there are hundreds of people and former Slave and Freedmen historical sites requiring state protection, how will you rectify your earlier errors?
44. Why is the BCS compressor station with the highest level of toxic air emissions of the three state-based compressor stations located in the middle of the Freedman community of Union Hill? In draft air permit, it cites Union Hill's "above normal ambient air quality" as the reason. Are people paying a price for being good stewards?
45. Union Hill community highly values its nonindustrial character. It is a quiet, suburban level populated, forested area, with clear night skies and ample wildlife. Descendants of people enslaved here have strong cultural ties to land purchased after freedom. Have former slave and Freedmen cultural practices, such as Black church homecomings and family reunions, been factored into health impact assessments of numbers of people directly impacted by BCS air emissions? Especially when all too frequent blowdowns will occur at the BCS site in this neighborhood?
46. Why are two of three ACP compressor stations in predominately African American neighborhoods and all three are in areas with disproportionately high poverty?
47. Dozens of families in the impact area of BSC have daily connection to lands once part of a familial complex of slave plantations. Local Freedman families have evidence of seven generations of continuous habitation in Union Hill. Since the pipeline infrastructure does not actually cross the land owned by many, they will not receive any compensation for their losses. What is being done to ensure that these families' quality of life and safety will allow them to continue to live in the area for generations to come without loss of health or wealth?

Historical Sites

48. Native Americans historical sites and artifacts will be disturbed with the construction of the Atlantic Coast Pipeline and potentially the Buckingham Compressor Station. Since these lands and histories have never been recognized by Virginia due to inadequate state and federal effort to document Native American claims in this area, how will you ensure that important history is protected?
49. FERC and subsequent DEQ consultation practices violated international norms for Free, Prior, and Informed Consent (FPIC) of Native Americans based on the United Nations Declaration on the Rights of Indigenous Peoples. How will adequate consultation with the descendants occur?
50. The only archaeological excavation of Native American sites in Buckingham took place at the James River at Wingina. However, University of Virginia archaeologists noted the large distribution of sites they could not undertake, as well as the hundreds of years of artifacts recorded by amateur collectors. The Advisory Council on Historic Preservation (ACHP) in a letter to FERC called for far more pre-colonial and antebellum archaeological study of Buckingham's sites at the James River and Union Hill before ACP construction. Can you explain how state agencies are confident in the historical records presented by ACP/Dominion Energy when there have never been adequate state ethnographic, anthropological or archeological studies in this area? How will we avoid the near total erasure of both pre-colonial and antebellum histories in a key site of Virginia and U.S. history?
51. To ensure that history is preserved, how will the exact number, location and historical period of each of the dozens of burial grounds and cemeteries in 1.2 mile radius of the compressor station be recorded?
52. A Buckingham County slave burial map was first created in the 1930s under the Works Progress Administration, and Buckingham Historical Society members noted that at least 50 more than the hundreds surveyed are yet to be surveyed. This includes a more than 100+ unmarked slave burial ground on the former Variety Shade Plantation land. We know by red dots on this map that in the 68-acres purchased by ACP/Dominion Energy for the BCS site,

there are numerous slave burial sites. Why have state agencies not required that 68 acres to have a cultural resource report filed?

53. How will the historically segregated African American schools in this part of Buckingham be recognized and protected? Why these have not received state recognition like those in other parts of the Commonwealth?

Liability and compensation for damages

54. Farmers have reported a current gas leak in the existing Transco 4-pipeline corridor in Union Hill. Has Transco reported that leak to state agencies? How often have such leaks on the Transco occurred?
55. Local residents are concerned that Transco paid no liability or damages fines directly to families whose homes were destroyed or damaged by the explosion in Appomattox County next to Buckingham County. What protection will be provided to us if the compressor station causes damage?
56. Buckingham County is a low medical-resource county. There is a clinic with a part-time doctor. Residents have to travel to Charlottesville or to Farmville -- long distances -- by ambulance in emergencies. Everyday healthcare requires driving long distances, at high costs, for this underserved, high poverty populations already. ACP/Dominion Energy denied a request by the Buckingham Planning Commission to set aside a bond to pay for the costs of health impacts from BCS. If the compressor station makes us sick or sicker, how will the state ensure we get the health services we need?
57. Mental health services are inadequate in our rural area. Now, given the additional stress and pressure already expressed by nearby residents about the threat to the health, quality of life, value of their land for themselves and future generations posed by compressor stations, how will we obtain enough social workers and psychologists to provide mental health services to this most vulnerable population? How will the state support those cannot afford these services already and if built, these additional social and monetary costs of ACP/Dominion Energy's new infrastructure constructions and operations here?
58. If community members get sick as a result of toxic emissions from the compressor station like formaldehyde, benzene, and hexane, would they be forced to sign non-disclosure agreements before receiving help with medical bills from ACP/Dominion Energy or Williams Transcontinental (Transco)?
59. We have been told that our home insurance premiums will not increase because we live in the blast zone of the compressor station. We have ample evidence from other communities already proximal to pipelines and compressor stations that homeowners' insurances companies are dropping customers at these sites? What recourse will we have if they do increase or if our insurance carriers drop our coverage?

Risk Assessments

60. Since Quantified Risk Assessment (QRA) is the best available management practice in instances of social vulnerability and risk of exposure, given the high of economic and political marginalization in Buckingham, isn't a QSA called for?
61. If a Comprehensive Health Impact Assessment (CHIA) has not been conducted, how did DEQ assess existing health conditions and numbers of persons in close proximity together with air modeling at BCS?
62. If state agencies have not looked at risks comprehensively, how can DEQ and other agencies assure Buckingham residents that the benefits outweigh the risks? Why not use known medical science to prevent known public health impacts of large compressor stations before issuing ACP/Dominion Energy's BCS air permit for public comment?
63. Why is the intersection of the existing 4-pipeline Transco corridor at BCS not placed at the forefront of the risks and hazards uniquely faced by the people of Union Hill? Given the then quantitative higher risks and hazards of leaks at this site alone?

Energy Poverty

64. The ACP and the BCS, if built, would not create energy access in Union Hill or Buckingham generally. Instead, BCS would contribute air and water pollution raising health costs paid by local residents. How will the state address this inequity?
65. On the basis of poverty alone, what does the state plan to do to address the fact that many in Union Hill and Buckingham live in energy poverty, defined as unable to cover basic utility provision? Union Hill's population is predominantly elderly and the very young, the most vulnerable to high heat and cold conditions. A door-to-door household study around BCS showed residents have pre-existing health conditions but 55% of the population responding could not afford air conditioning. How will the state consider the inequity of highest environmental impact costs per capita of the ACP on a National Environmental Policy Act (NEPA), majority black, impoverished community?

State Water Control Board

66. Will the State Water Control Board consider impacts to the wetland on the site of the BCS? If not, who is responsible?

Economics

67. We did not choose to live in an industrial area and our community is not zoned for such use. However, the Special Use Permit allows this industrial equipment to be placed in our community. How will our property values be protected? How can we be assured that this is not the start of a permanent change in use?
68. Has state agencies considered the dropping values of property in this community? The latest sales involved far lower market values than before ACP's plans for BCS.
69. Economists document that existing pipelines can provide more capacity and will transport gas three to eight times cheaper than can the Atlantic Coast Pipeline. Why are we not using the most cost effective means?
70. The presence of the compressor station in our community will affect current clean and sustainable economic uses of our property. Construction of BCS and daily operations will impact raising cattle and other domestic animals, growing crops, our kitchen gardens, a yoga teaching and retreat center of Yogaville, with a large resident and over 10,000 annual visitors seeking peace and spirituality. Future plans already foreclosed in this neighborhood include a greenhouse business and a small winery. We ask DEQ to consider and weigh in the balance ACP/Dominion Energy's desire for profits for shareholders' benefits not Virginia utility consumers. Do our investments in good quality of life and future economic prosperity have to be sacrificed?
71. How is the state ensuring that our community is not economically damaged by this infrastructure and that it will be economically sustainable in the future?
72. When renewable and alternative energy is sited on property, landowners get monthly lease payments. Instead, properties crossed by pipeline receive a one-time easement payment. How much income could landowners receive if this land was used for solar infrastructure?

Renewable and Alternative Energy

73. How many solar jobs and how much energy could be produced if the money invested in the BSC was invested in solar infrastructure instead?
74. We ask DEQ to support the Union Hill solar projects. What can DEQ do to ensure inequity in energy burdens (i.e., toxic exposure) changes to equity in access to income producing renewable energy?

Baseline Testing

75. We saw that in December of 2016, the Office of Environmental Health & Safety (OEHS) made a clear recommendation to DEQ to do baseline testing of well water and septic fields along the length of the ACP. Why was that not done?
76. Does DEQ know that 100% of drinking water, all water, is from individual wells in almost every part of Buckingham, including Union Hill? Has DEQ assessed the distance of these

wells to underground aquifers where the ACP plans to intersect with the existing 4-pipeline Transco underground in a large wetlands?

77. We also saw that in October of 2017 that VA Department of Health (VDH) recommended to the DEQ to do surveys for both the ACP in karst topography of wells and surface water. Why was that recommendation not accepted and followed through? Geologic reports for the James River where ACP/Dominion Energy plans to horizontal drill underneath the river find "karstic rock features" and a seismic faultline. As this site is very close to the ACP's BCS site and the James River is a major river basin and primary water source, what has DEQ done to assess the hazards and risks of these two interlinking major ACP infrastructure sites?
78. Will DEQ conduct baseline testing of well water, surface water, air, and noise? If so, when? Shouldn't it be done in every season of a year to be most accurate?

Local Emergency Response Capacity

79. Has the facility prepared a Spill Prevention Contingency and Countermeasure plan for the tanks and have they shared the SPCCs with the local emergency planning agencies?
80. What plans have been made for local emergency responses?
81. When will we see evacuation plans?
82. We are worried about the inadequacy of local emergency response services in Buckingham and the highly pressurized, toxic, explosive, and flammable nature of the materials at BCS and in other ACP infrastructure. How will the state assure the safety of local residents?
83. How will ACP/Dominion Energy use local knowledge of limitations in emergency response to make our system more robust? How can we be assured they will not be allowed to set a standardized evacuation process that does not fit our local challenges and characteristics?
84. Many compressor stations start without clear evaluations plans. We know people currently living with compressor stations that have no local emergency plans. FERC does not enforce their provision. What steps can we take if ACP/Dominion Energy's promised evacuation plans are inadequate to assure public safety?

Necessity

85. Are you convinced of the necessity of the ACP when there are existing pipelines that could carry this gas and they were not adequately explored, according to FERC Commissioner Cheryl La Fleur?

Noise

86. We have seen documentation of compressor stations of the same size and same general equipment as BCS generating 90 decibels of noise during blowdowns. How can you assure BCS noise levels will stay below the 55 decibels permitted?
87. Dominion representatives repeatedly tell the press residents will not even notice the noise of the compressor. On what evidence is this based?
88. Please provide us with studies documenting the long term health effects of long-term exposure to permitted noise levels of 55 decibels.

Property Rights and Eminent Domain

89. People in our community have eminent domain court proceedings scheduled for 2019. Can they be assured they will have fair access to all levels of the courts before ACP and BCS construction?

Waste

90. Gas from Marcellus shale has been recorded to contain higher than average amounts of radioactive materials. These radioactive materials and other pollutants end up in the waste from pigging operations done on site at Buckingham. What is the protocol for measuring, storing, and disposing of the toxic waste from the approximately 10 pigging operations per year in the BCS permit?

91. We have been told the BCS construction and ACP construction will require significant water and that the produced water or wastewater containing pollution will be trucked out of Buckingham. Where is the water coming from?
92. Where will waste water from construction activities be taken and dumped?
93. How many water trucks will Buckingham residents need to anticipate on our roads during construction?
94. What are the plans to monitor and control particulate matter pollution from truck construction traffic and other construction activities?

Recordkeeping and Transparency

95. Why are we the last to find out what will happen in our neighborhood? Why do we have to rely on Freedom of Information Act requests to get the real story?

Staffing/Security

96. Given that wi-fi transmission is unreliable in Buckingham, how can Dominion claim use of BACT? Fibre optic cables are the proven best current technology. What can be done to increase security of remote control of BCS from West Virginia?
97. We have received conflicting information about 24/7 staffing of BSC for onsite real-time data collection & monitoring during the life of the compressor station. Will there always be staff on site, even on weekends, holidays, and after the first year?
98. Can the APCB approve the permit when there does not appear to be a Special Use Permit (SUP) for the stacks?
99. How is it possible for DEQ to go forward with compressor station permit hearings with the uncertainty that exists regarding FERC's certificate?

Transco Pipeline

100. Many gas industry reports, and even FERC Commissioner LaFleur, argue the ACP is unnecessary and redundant. If the ACP is canceled due to market shifts or regulatory shortfalls, would the BCS still be built to move the increased gas that is expected with the expansion of the Transco pipeline?
101. Can increases in Transco gas compression in Buckingham move through the compressor without being regulated in an air permit?
102. Would impacted residents be consulted prior to future decisions about increases in gas transportation through the BCS or can DEQ approve increases without community knowledge or input?

Ammonia Tanks

103. The size of the ammonia tanks on the BSC site have increased from 8,000 gallons to more than 13,000 gallons. How does DEQ assure the safe handling of this dangerous material?
104. What relation has this ammonia storage to the Control Board hearings on ammonia set for September 11 & 13?

Electromagnetic Radiation

105. Microwave communication towers impact health due to electromagnetic radiation (EMR). What documentation can you provide us on the effects of exposure on nearby residents from microwave towers like that proposed at BCS?

Uncertainty and Foreboding Fear

106. Every time Buckingham Board of Supervisors has a meeting, do you know we wonder what new pipeline-related surprise we will face? Every low flying helicopter and construction crew invading our quiet neighborhood creates a sense of dread and fear that means our quality of life has already diminished.



Air Division 1, rr <airdivision1@deq.virginia.gov>

Public Comment: ACP Buckingham Compressor Station Air permit: Dr. Lakshmi Fjord

1 message

Lakshmi Fjord <lakshmi.fjord@gmail.com>

Fri, Sep 21, 2018 at 11:59 PM

To: airdivision1@deq.virginia.gov, citizenboards@deq.virginia.gov

Please find attached my public comment for the Atlantic Coast Pipeline Buckingham Compressor Station air permit to the VDEQ Air Division

I would respectfully ask that you make the full document of my comment available to all members of the Virginia Air Pollution Control Board. And, I have included this citizenboards email address on the email recipients.

Sincerely,

Lakshmi Fjord
420 Altamont St.
Charlottesville, VA 22902
510-684-1403
lakshmi.fjord@gmail.com



LFjord ACP Air Permit Comment.docx
742K

Lakshmi Fjord, Ph.D., Chair, Civil People's Tribunal on Human Rights and Environmental Justice Impacts of Fracked Gas Infrastructure (ACP & MVP); ACP Intervenor
Visiting Scholar, Dept. of Anthropology, University of Virginia
Friends of Buckingham steering committee; Union Hill demographer, historian
Yogaville Community; Yogaville Historic District team
420 Altamont St., Charlottesville, VA 22901
lakshmi.fjord@gmail.com / cell/text: (510) 684-1403

Air Pollution Control Board
Department of Environmental Quality
Division of Air and Renewable Energy
airdivision1@deq.virginia.gov
citizenboards@deq.virginia.gov

Sept. 21, 2018

Public Comment: Air permit, minor source construction permit, Atlantic Coast Pipeline LLC, 21599

I respectfully address my public comments to the Air Pollution Control Board members because this citizen board has been charged with the power to approve or not approve the air permit submitted by Atlantic Coast Pipeline-ACP for their Virginia compressor station (CS 2) sited for Union Hill, Buckingham, Virginia.

I ask the comment readers of the DEQ Air and Renewable Energy Division to kindly read and summarize those parts of these comments that apply to the narrower limits of their authority to respond to expert and impacted citizen's technical comments, permit omissions, and questions to be answered for which the answers are not available in those permit documents. In these comments, I wear both expert and impacted citizen hats, the details of which are found in my affiliations listed with my address information above.

Power of the VA Air Pollution Control Board

The DEQ Air Division staff met yesterday (9-20-18) with a group of legal, social scientist, community group, and non-profit representatives, including myself, to discuss what the Air Division "can and cannot do" vis a vis the Buckingham compressor station (CS 2 – according to Atlantic and FERC) air permit application -- among more general permitting work by staff. And, what the Air Pollution Control Board can consider and do to deny or approve the air permit.

Mr. Dowd explained that in Virginia, it is in the authority of Virginia's Air Pollution Control Board's to give final denial or approval of this air permit. That you may consider more comprehensive and more site specific concerns with the Buckingham air permit is confirmed by the language of the APCB 2010 statute: "The Board in making regulations and in approving variances, control programs, or permits, and the courts in granting injunctive relief under the provisions of this chapter, shall consider facts and circumstances relevant to the reasonableness of the activity involved and the regulations proposed to control it, including:

1. The character and degree of injury to, or interference with, safety, health, or the reasonable use of property which is caused or threatened to be caused;
2. The social and economic value of the activity involved;
3. The suitability of the activity to the area in which it is located; and

4. The scientific and economic practicality of reducing or eliminating the discharge resulting from such activity.

My comments are framed in reference to each of the four numbered points of your statute, particularly at their intersection with “site suitability” and “incorporating environmental justice into decision-making” as per Virginia codes and Executive Orders.

Virginia Energy Policy (Code of Virginia § 67-101) energy objectives include “developing energy resources and facilities in a manner that does not impose a disproportionate adverse impact on economically disadvantaged or minority communities.” In 2017, Governor McAuliffe created the Governor’s Advisory Council on Environmental Justice (ACEJ) under Executive Order #73, to provide “a consistent, action-oriented approach to incorporating environmental justice into decision-making.” Governor Northam’s Executive Order #6 includes: “Engaging the regulated community, local governments, and other interested stakeholders in the development of new protocols”; and, “assessing gaps in DEQ resources or authorities necessary to address challenges identified under this review.”

As a citizen board, I’d like to give you some sense of who we are – people who woke up one day to discover their known world would now be turned upside down by people who want to take for their advantage what you have, with no benefit whatsoever to yourself, your family, your land, or your community. First, we have had to become “citizen scientists” over the past four years since we first learned about ACP siting their only Virginia compressor station in Union Hill, Buckingham County, VA. For four years we have had to educate ourselves, our neighbors, and our communities about fracked gas infrastructure -- because no local, state, or federal agency tasks themselves with informing, educating and giving expert knowledge to impacted communities – only to developers. We performed household demographic studies, including existing health conditions, land uses, and local family history. We read thousands of pages of field studies of health impacts, construction and traffic, man-camps’ crime, grave impacts to water, air, soil; we had to study hydrogeology and former plantation and Freedmen history; I have made 17+ public comments: to local Buckingham Planning Commission and Board of Supervisors, FERC, VA DEQ Water Division, VA DEQ Air Division on site [in]suitability, missing cultural history, erased demography, current green economic uses of our land, and water, air, and soil impacts of this siting in an A1 Agricultural Zone.

We who did not “go along” with ACP’s Union Hill compressor station site plan have faced a lot of hostility from our elected local Board of Supervisors, whom Dominion had been priming for 3-4 years prior to 2014, with promises of increased corporate taxes (still without any accounting formula given for their figures) and jobs. Jobs have long been limited in Buckingham and related to extraction economy: clear-cut forestry, kyanite mine, slate quarry, two prisons, once gold and copper mining. Buckingham was once a rich county based on prosperous slave plantations whose size and profitability are revealed in the ledgers left behind by owners listing hundreds of slaves and their individual values on lists of “Stock”; alongside investment of their profits in real estate in New Orleans, New York City, Florida and Texas. Buckingham has never fully recovered from the loss of the 2:1 majority slave labor since forced emancipation after the nearby surrender at Appomattox.

We who “oppose the pipeline” and the Union Hill compressor station have been branded as “environmental zealots.” But, that is precisely who we are not. We are listeners to promises and observers who on the day that FERC approved tree cutting for the ACP at 5p at night witnessed

within 15 minutes, 15 trucks all with out of state licenses from very far away (Utah, Wyoming, Arizona, closest was West Virginia) piled up at one of Yogaville's community member's access road to survey and cut trees. Where they did not even yet have an easement agreement. In a county that has relied on tree cutting jobs and income from one's timber for hundreds of years -- not one Buckingham tree-cutter had been hired by ACP contractors, despite more than two years to plan that night's work. Not one Buckingham tree-cutter was hired during that entire easement tree-cutting window before the Migratory Bird season began.

We impacted people of Buckingham are people for whom there are no easy generalizations. We are children of immigrants, descendants of white colonists, impacted descendants of former slaves who, after Appomattox, bought from or were given land from their former white owners, cattle, dairy, and organic farmers, yogis who moved to Buckingham for the pure natural resources, retirees who invested their life savings in affordable land and new homes, and people who planned sustainable agricultural business projects to build greenhouse businesses and vineyards. We have come to know each other better across fissures that are still deep in Buckingham: across race, across religion, across educational and geographic background.

All are directly impacted people whose hopes, investments, and potential to provide sustainable green energy jobs in and near Union Hill are now at a standstill -- thwarted by ACP LLC, a for-profit, fracking and fracked gas transmission pipeline enterprise allowed to seize land for easements by eminent domain. The citizens responding to this call for public comment are not politically aligned on one side of the aisle nor are Dominion Resources' campaign contributions to local, state, and national elected officials, or charitable contributions to local groups where they seek permits based on political parties.

Now that the "Baptists and the Yogis" have made national news, now that Union Hill is becoming the symbol for larger environmental groups about all that is wrong with taxpayer-funded support by state agencies and elected officials to for corporate profit-only fossil fuel developers seeking to build no longer needed, toxic polluting, far more expensive than renewable, infrastructure -- Dominion is trying to "reach out" to Union Hill, making allusions to "what they can do for" the community. When Union Hill's story was local and suppressed even by people in other counties focusing on moving the pipeline from this site or that site, Dominion completely erased Union Hill's existence from its applications and records. When our household study and historic cultural research finally reached the national stage, now Dominion reps are meeting with Union Hill community residents -- but with no talk of compensation which is what they want. Each week, at meetings Dominion reps are asked for and promise **an evacuation plan**. Yet, even that minor gesture of goodwill has still not been delivered by Dominion -- after 4 years.

We call it "running down the clock" during the DEQ and APCB air permit process. So, when Chairman Dunn of the VA Water Control Board asked the rhetorical question of the Richmond Times Dispatch yesterday after their vote, whether or not "a water permit can stop the ACP???", keep in mind that Dominion thinks you of the APCB can, through rejecting their air permit for Union Hill compressor station. Without the Buckingham compressor station, there is no transmission to Cove Point overseas markets through the Transco -- key to their business plan now that they have taken their promised gas-fired power plants off the table as too expensive to build.

Thus, we ask members of the APCB to not recuse yourselves unless you are directly indebted to

Dominion Resources for your or a family member's employment. For, everyone in the state of Virginia is enmeshed in webs of economic ties to Dominion Resources, whether legal consultants or non-profits that have received funds from fines levied on Dominion, or me as a Dominion Energy utility customer in Charlottesville. However, in Buckingham County, where Yogaville is located, we are not indebted to Dominion for providing and maintaining our public utility infrastructure. We have an electric co-op because Buckingham is too large and rural to be profitable to Dominion Energy.

Yet, Buckingham County is being asked to bear the largest toxic burdens of any county in Virginia by a non-public utility provider, ACP LLC. Which through legislative influence, by sharing a parent company, allows Dominion Energy, my public utility, to force me to pay the full costs of the ACP construction and operation. Forces me to pay to forever change the clean air, water, and soil of Yogaville, whose site I helped to choose in 1979 to re-locate our spiritual community because of its existing pure natural resources that are integral to our spiritual practices (pranayama, hatha, meditation), our spring-fed organic farm, our 100% drinking water sources from individual well water as throughout Buckingham, and where ACP plans to drill under the designated Scenic and Historic James River on Yogaville community member land, and from there route their pipeline within 700 ft. of our school.

This is the personal angst I face, especially when I consider how ACP's site planning for the Buckingham compressor station threatens Union Hill, a community I hold dear. I have worked as a full-time volunteer community field researcher for 3 ½ years, putting my yoga principles of non-violence together with my PhD anthropology training and experience from over 22 years in NIH- and Fulbright-funded community medical field studies to conduct NEPA-esque demographic and cultural historic research in Union Hill to remedy Dominion's erasures of factual site characteristics for CS 2.

In our meeting with the DEQ yesterday, it became clear that the DEQ wants to "move on" from the air permit to "lessons learned" from Buckingham permit process. Certainly understandable, given that they do not believe they have any authority to consider the environmental injustices, the environmental racism, of ACP's site choice for their CS 2. ACP's denial of racism in their site choice, repeated often now, is belied by their actions to entirely erase the name of the community and factual population of Union Hill, the 99 households in close proximity on all sides, its majority African American race, and its historic Former Slave and Freedmen history in all public documents, including applications, cultural resource reports, and even to my face by the CEO at this year's Dominion stockholders meeting. When asked if he knew about the household study I had conducted in Union Hill, its race, and population statistics, its history, Mr. Farrell responded, "Yes." Would he correct those factual errors? "No," he would not. Below, I will provide that historical and household evidence.

Were there other places to intersect their new ACP Pipeline ("redundant" according to FERC Commissioners LaFleur and Glick) underground with the existing 4-pipeline Transco corridor? To send fracked gas from their drilling sites in West Virginia to their Cove Point LNG facility in Maryland for foreign markets (proudly reported to shareholders by CEO Farrell with photos of Japanese freighters shipping Dominion's fracked gas overseas)? Yes, of course, many sites in this sparsely population rural county: many sites far less populous than Union Hill, and not majority African American.

The added burdens from this new race divide created by Dominion's site for CS 2 need to be

considered a true social cost to Buckingham, with moral implications for our state and our nation. The legacy of slavery in Virginia is a living reality in Buckingham. And, it manifests in the complete capitulation by the Buckingham Board of Supervisors (BoS) to Dominion's insistence at the CS 2 special use permit hearing that there would be no "bond held in escrow" for direct impact costs to Union Hill residents; no money given for extra safety equipment or emergency responders in an all-volunteer fire department; no willingness to even listen to Union Hill requests to somehow link into the 125 ft wifi tower in an "internet desert," among just a few of the list for this CS 2 site proposed to the Planning Commission based on community input. The BoS unanimously approved the CS 2 site without these conditions, with a recusal by 37-year employee of Dominion who stepped down as Board chair for this vote and went back on after it. The only "condition" was for one on-site shift for one employee, where ACP had planned to remotely monitor this complex from West Virginia solely through wifi transmission. Note: the absence of jobs related to operations activity?

The intractability of Dominion toward the Union Hill community, not budging an inch to provide any tangible cost benefits to the community or protections, the race divide made worse by Dominion, is amplified in my power-point slide below. It is a tale of two Dominion energy projects in Buckingham, which is a tale of two races.

Dominion in Buckingham: A tale of 2 energy projects is a tale of 2 races

Dominion & solar vs Dominion & fracked gas transmission

For white heritage farm = solar fields & monthly lease payments for domestic renewable energy; used to attract Amazon hub to Richmond for sustainable jobs of the future.

For Union Hill, African American majority, at ACP & Transco, redundant, outdated, costly toxic emitting complex to send fracked gas overseas. One-time easement payment seized by eminent domain; no payments to all households that ACP does not cross with pipeline.

Reuters, May 24, 2018: "Vista Energy and Dominion Energy – which serve about 5.5 million electricity customers in more than a dozen U.S. states – both say they are done building combined-cycle natural gas-fired power plants. Instead, they are building large solar plants, which offer plentiful and inexpensive electricity.

In Virginia, Dominion Energy ended several maintenance contracts it had with GE this year when it mothballed a large gas-fired plant and idled seven other coal and natural gas units in the state. Dominion aims to build 4,720 megawatts of solar by 2033, the equivalent of about five large combined-cycle power plants. It is opening a new combined-cycle natural-gas plant in Virginia this year, built with GE and Mitsubishi equipment. It said it has no current plans to build more such plants. "Solar is very cheap," Dominion spokesman Dan Genest said. "These units were just not cutting it."

Yogaville has already made strides towards solar energy production. And, Friends of Buckingham has been working on a project called, "Solarize Buckingham" to create equitable access to solar energy production. Union Hill large landowners would greatly prefer monthly

solar lease payments instead of no payments and no compensation by Dominion at their CS 2 site – yet, heaviest load of toxic burdens of the ACP. We in Buckingham want vocational training at Buckingham high school for sustainable green energy jobs in renewable energy and energy conservation. Not false promises of even lowest paying tree-cutting jobs that ACP didn't think they needed to deliver on for impoverished Buckingham.

The race-based characteristics of the CS 2 site in Union Hill and Buckingham County generally are now rare in Virginia. Where large proportions of the population are descendants of former slaves still living near descendants of former white plantation owners that enslaved their ancestors. African American residents of Union Hill who speak out about the environmental injustice of the CS 2 site in local permit hearings or any public hearings, disrupt a fragile fabric of race relations hundreds of years old. Survival has relied on silence, and so, they constantly face shunning and reprisals. It was the white descendants of former Variety Shade plantation owners who sold 68 acres to Dominion for the CS 2 complex, receiving \$37,675 an acre for land where then market value was \$3,000. Now, black heritage land values that lie close on all sides of that site are deeply slashed in value.

With this context in mind, forgive us for resisting a narrative we heard yesterday expressed by DEQ staffers, that Union Hill will now stand for “lessons learned” about what not to do in order to prevent future disproportionate environmental injustices based on targeting communities of color for new infrastructure sources of toxic pollution. Rather than to protect Union Hill today. Such narrative slippages reveal that DEQ has “approved” this air permit they send to you, without reading other experts’ comments, in advance of your decision. Those sorts of sacrifices of their lives, labor, and respect have been asked of Union Hill’s Freedmen descendants for far too long. Please do not allow it.

Cost/benefit analyses related to activities included in the CS 2 air permit

I include these comprehensive social, historical, and environmental justice injuries and their economic and social costs onto the comparative balance sheet equation of cost benefits from the activity vs. cost benefits of not allowing the activity, thus preventing the “injury to, or interference with, safety, health, or the reasonable use of property which is caused or threatened to be caused.” For, I hope the Board agrees that it is necessary to weigh in the balance a fracked gas transmission line already threatened by redundancy and over-building. Energy conservation has led to sharp downturns in electric consumption. Shale gas reserves from West Virginia have always been assessed at a 7-10 year extended lifespan. We are already more than halfway there since ACP's initiation. Transco operates at just over 55% capacity and has already made public comments to FERC about their being “no need for the ACP, which follows other industry and economic expertise. Ironically and horribly, Union Hill will be subject to far higher toxic pollution if the pipeline carries less than 50% capacity. And, nowhere I believe does the DEQ address Transco's additional pipelines in this mix of comprehensive injuries to safety, health, and climate change and more of this intersection of 5 pipelines at CS 2 site.

Has DEQ included Transco's 4-pipelines' emissions in their figures? Considered their increased chance of leaks and breaks? Where Dominion's “activity” involves threats posed by a large fracked gas compressor station's necessary operations to pressurize gas to the highest allowed psis of pressure to transmit gas over 200 miles to the next compressor station CS 3 in Northampton or along the Transco pipelines to Cove's Point LNG facility and offshore markets. Partnership for Policy Integrity (PFPI) has just released a report on “secret chemicals” used in fracking operations that are present in transmission lines, emitted in compressor station

blowdowns planned or accidental. These chemicals are used in drilling and fracturing but well operator don't identify them for proprietary reasons. While this report focuses on the possibility of fracking and wastewater dumping in the Delaware River Basin – a water source for New York City and Philadelphia – its discussion of secret chemicals has broad relevance to the air permit. DEQ doesn't even know all the toxic chemicals to look for, to create modeling for, in CS 2's air permit.¹ The toxic cocktail of known and unknown toxic sources of emissions threatens injuries to our air quality, to 100% of our drinking water supply in Buckingham, increases the individual medical expenses of those impacted by any level at all of new toxic pollutants, particulate matter from finest grain to largest, any amount of benzene, NO₂, and the rest of the toxic brew listed in the air permit and missing from the air permit as noted in expert comments below.

DEQ staff will tell you as they told us in their Buckingham Informational Meeting on Aug. 16, 2018, and yesterday, that they have spent hundreds if not thousands of DEQ expert staff taxpayer funded time to research Best Available Control Technology –BACT so that no matter the size of the population, their race and age vulnerabilities and known health disparities – this air permit will never ever create any health impacts. We are not sanguine about that statement. It does not match the facts about the cumulative impacts of this cocktail of chemicals used in the fracturing process, the VOCs, particulate matter, HAPs, and radon released, taken together and continuously ingested by humans, animals, plants; released into the air, settled into our water supplies, and percolating into our soil – and their cumulative impacts on individual health of each species exposed.

DEQ Air Division staff informed us their suggestions for BACT and their modeling are based on an EPA-generated list of field studies on compressor stations that is updated only every five years. In fracked gas studies 5 years is a veritable lifetime since fracking and its infrastructure development has exploded in volume in that time span. None of the 17 studies DEQ used as data involve compressor stations of the size proposed for CS 2, we are told, and therefore, it was necessary to spend hundreds of hours on modeling by DEQ staff. I asked if they had read the annotated bibliography compiled, published, and made accessible for free by Physicians for Social Responsibility and NY Concerned Health Professionals each year for the last five years. This year's -- 2018's Fifth Edition -- comprises 1300 independent scientific studies on fracking and its infrastructure and health impacts, of which most studies are very recent (2016, 2017), not outdated as those used by EPA list.² "No," I was told. They use the EPA list only.

DEQ reported to us, people impacted by the CS 2 site, the hundreds of hours of modeling they conducted for the ACP CS 2 and to analyze the data. None of this time was or will be paid for by Dominion, but by us, Virginia taxpayers. They are proud of that expert time, care, and attention spent because they believe they cannot deny a permit, only try to make it better.

Yesterday, we learned of the 4 times DEQ Air Division staff "rejected" Dominion's CS 2 air permit for Union Hill, telling Dominion staff to improve it, and how exactly to do so, with greatest detail. We on the ground will tell you that our local Board of Supervisors, we impacted people, our experts, have not profited from those thousands of hours of taxpayer funded expert

¹ <http://www.pfpi.net/secret-fracking-chemicals-threaten-delaware-river-basin-pennsylvania>

² Compendium of Scientific, Medical, and Media Findings Demonstrating Risks and Harms of Fracking, 5th Edition, 2018.
<https://www.psr.org/blog/resource/compendium-of-scientific-medical-and-media-findings-demonstrating-risks-and-harms-of-fracking/>

DEQ staff time to work closely with us on how to ensure the rejection by FERC of ACP's so flawed, incomplete, and false site data that totally erased CS 2 site information demographics and cultural history. Nor did we receive DEQ staff expertise to counter the Dominion's equally flawed, incomplete and misleading special use application, nor did DEQ staff employ their expertise to outright "fail" DEQ's first air permit filed in 2016. This despite Dominion reps' claims to Union Hill residents in meetings that their over 100-year history of building compressor stations and maintaining them has resulted in their being looked up to as leaders in this field. Why, if they can't write a passing air permit without years of our taxpayer support?

Mike Kiss, the DEQ air modeling expert who spoke with us yesterday, admitted it was "misleading" for Dominion representatives to over and over reiterate in the CS 2 special use permit process to the Buckingham Planning Commission and then Board of Supervisors that CS 2 will only have a "blowdown" once every five years. Because no one from the DEQ with their 20+ and 30+ years of expert knowledge was there to correct them, Dominion's "word" over-rode all of our citations of operational compressor stations that proved them wrong. Which then and now calls into question their right to expert status after 100 years of building compressor stations. Do we call this lying or deliberate misinformation? No matter, Dominion received their special use permit in an A1 Agriculture Zone, against our county Comprehensive Plan to protect farmland.

This comment asks you to consider what constitutes "expertise" then in your analyses of our comments, of DEQ's, of Dominion's? For, whoever is given "expert" status at every level of this permitting process and what constitutes factual, credentialed evidence are the central questions at stake in your decision-making. Is it an outdated EPA list of studies or 1300 of the latest independent science on fracked gas compressor stations as recent as 2018? Is it Dominion's claim that there are 29.6 people per square mile at the CS 2 site or is it a door-to-door household study over a one-year period of 99 households with a 76% response rate that finds a 600% higher population?

Dominion was given years of access to the Buckingham Board of Supervisors to supply misinformation about blowdowns, health impacts and jobs that already have not materialized in Buckingham. While each of us – the public, expert and impacted -- had 3 minutes to make a public comment in each local hearing, and never received a single direct response from BoS members about our many expert written comments that refuted Dominion's application "facts," pointed out their gaping omissions of necessary BACT and construction details. We pointed out many of the problems with Dominion's first air permit application we are now are told DEQ has worked years to try to solve. Some are not solved or solveable, as seen below in the list of expert comments and questions that remain unanswered about this air permit and its site.

By the amount of time spent by DEQ to "improve" the air permit, you can get a sense of how numerous and accurate were our expert objections over-ruled by the "expert" status given to any statement made by a Dominion representative to our local BoS instead. With 91 total public comments, 4 for and 87 against, the BoS unanimously approved the special use exemption for CS 2 in an A1 Agricultural Zone. A permit allowing a 54,000 hp (up to 57,000 in winter), metering and regulatory station, 125 ft. wifi tower, 3 above ground storage tanks at a 68-acre complex where the new ACP pipeline would intersect underground with the existing 4-pipeline Transco corridor in the middle of a huge wetlands where 100% of the drinking water is from individual wells close on every side of that complex.

We have all had to become citizen scientists. And, yet, when we give factual evidence, our data has not the leverage of the corporate applicant no matter how incomplete, in error, or even false.

Site Unsuitability: Environmental injustice, existing health conditions, social and economic costs to be paid by individuals and communities not ACP LLC

Far more concerning, if that is possible, from an environmental racism perspective, is the siting of the only Virginia ACP compressor station in a majority African American community, whose very existence, name, population, race, and former slave history has been erased from all ACP applications and reports, and from FERC's Final Environmental Impact Study-FEIS. As the person who designed, oversaw, analyzed and provided evidence to partners, including Friends of Buckingham's legal representative, Southern Environmental Law Center-SELN, and in public comments at every step of the permitting process for this CS 2 compressor station, for the ACP to FERC, to DEQ and Water Control Board, I provide evidentiary details below.

Dominion has consistently used misinformation about the factual population, race, and omission of historic cultural resources in submissions to Buckingham elected representatives, to FERC and DEQ. Misinformation that erases the name of the community, denser populated numbers of people living in close proximity, majority African American race, and erasure of their Former Slave and Freedmen history (as well as former plantation history) has shaped decision-making at every level of ACP's permit processes.

1. Dominion unfairly singled out Buckingham County from all counties along the three state route of ACP to claim it has "no historic resources" whether archaeological or architectural in that segment. Yet in all other counties, completely similar resources of early and mid-20th Century and 19th Century homes, churches and their cemeteries, bridges, dilapidated farm structures and stores, etc. were listed and photographed for 1674 pages. Alone, Buckingham's history was/is denied and erased.

- ❖ In Sept. 18, 2016 ACP filed a 1674 page cultural resource application to FERC. For Buckingham County only, ACP had "no recorded resources identified within the modified project APE" (Appendix D: 31).
- ❖ In March 24, 2016, ACP filed their Addendum of cultural resources. In Appendix D on P. 31, for Buckingham ACP reports only "three [total] resources are "documented within the modified project APE include three single-family dwellings that range in date from circa 1940 to circa 1965 . . . They have no known association with a significant event or person and are not associated with any broad patterns in history."
Pp. 330, 331, and 332 are photos of that list of homes/addresses: 330 & 331 **are the same home/same photo. 332 is not in Union Hill.** L. Fjord identifies 330/331 – the only cultural resources listed for the whole county of Buckingham – as Theo Haskins' on S. James River Highway, an abandoned trailer next to a modular home, without the family cemetery that adjoins it.
- ❖ That is, Dominion's contractors had to visibly ignore 99 homes on all sides of the CS 2 site, 2 historic black churches and their cemeteries (Union Hill Baptist est 1868; Union Grove Missionary Baptist est. circa 1920); 1 historic white church

and cemetery est. 1831, 2 historic black school sites, the 1880s Freedmen home place of the Harper family next to the proposed CS site, no photos of the Variety Shade tobacco barn or of Shelton Store, which is visible from the road in Union Hill.

- ❖ May 3, 2016, "Union Hill/Woods Corner Rural Historic District" Buckingham, VA was listed by Preservation Virginia as a "Most Endangered Historic Place" in Virginia. Notification of that listing and its complex of historic resources, marked and unmarked slave burials, churches, cemeteries, former plantation sites, farm structures, homes, photographs, and slave plantation neighborhood history have been part of public record of comments made to the Buckingham Planning Commission, the Buckingham Board of Supervisors, to FERC, by Dr. Lakshmi Fjord, Justin Sarafin and Sonja Ingram of Preservation Virginia since August 2016.

2. Dominion knowingly erased the existence of Union Hill as a known community, and its 99 households visibly within 150ft – 1-mile radius on all sides of their ACP VA compressor station site. In their 2015 FERC application and in all local and state permit processes both written and submitted at public hearings, ACP used the 2010 census average person per square mile data for the whole of Buckingham County – 29.6 – to report the population for ACP CS 2.

- ❖ On May 30, 2018, the spokeswoman for Dominion to the Governor's Advisory Council on Environmental Justice claimed "it is the law" to do so -- when National Environmental Protection Act-NEPA guidelines state the opposite is true:

"The fact that census data can only be disaggregated to certain prescribed levels (e.g., census tracts, census blocks) suggests that pockets of minority or low-income communities, including those that may be experiencing disproportionately high and adverse effects, *may be missed in a traditional census tract-based analysis.*" ***Caution is called for in using census data due to the possibility of distortion of population breakdowns*** ... In addition to identifying the proportion of the population of individual census tracts that are composed of minority individuals, analysts should attempt to identify whether high concentration "pockets" of minority populations are evidenced in specific geographic areas. ... The IWG guidance also advises agencies not to 'artificially dilute or inflate' the affected minority population" (1997, 15-16).

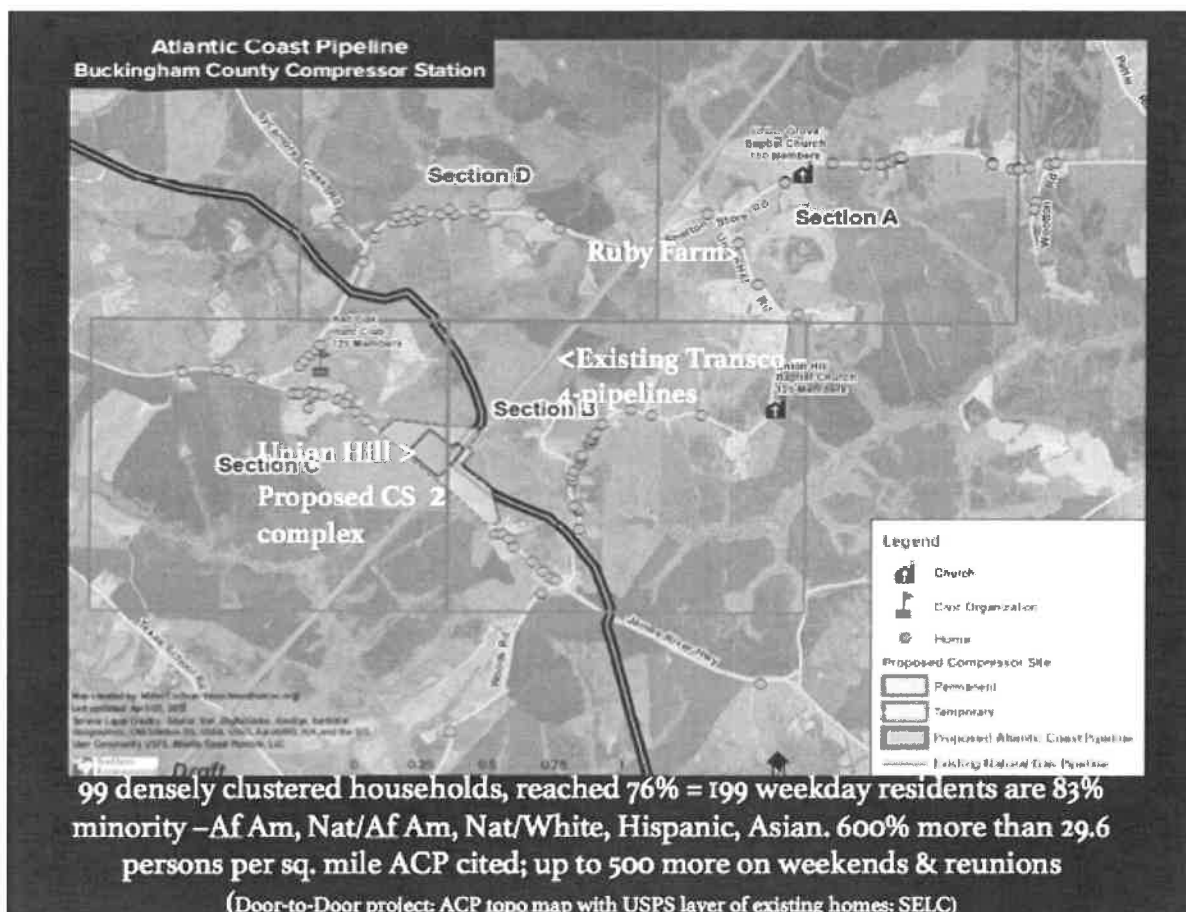
- ❖ The Union door-to-door household study of Union Hill designed and conducted by Dr. Lakshmi Fjord (UVa, Dept. of Anthropology) began in August 2016 to uncover the actual 1-mile radius demographic and historic data for the CS 2 site has had 3 stages for a total of 4 months, and ending Sept. 4, 2018. The study follows NIH protocols for health information confidentiality, and community research guidelines. Open-ended interviews of 1-1.5 hours took place in 67 of the 75 households reached. Data includes: factual population, race, ages, pre-existing diagnosed health conditions, family heritage in Union Hill and nearby, and existing economic or food source uses of their land.

ACP's Buckingham CS site map found at dom.com, with a layer of household addresses added by Southern Environmental Law Center based on USPS postal

addresses, proves that Dominion always knew and could submit accurately that CS is not “sparsely populated,” is not 29.6 people per square mile.

- ❖ There are many cost benefits to Dominion to erase the population of Union Hill. By contravening NEPA guidelines, FERC in ACP’s Final Environmental Impact Statement-FEIS reports no environmental justice issues besides low-income for the entire ACP route, which includes Union Hill-sited CS 2 (FEIS 4.9.9.1 Demographic and Economic Data, Vol 4-512). FERC notes their concerns if there were an African American majority population at this site:

“As discussed in section 4.11.1, air pollutants associated with ACP and SHP include increased dust as a result of construction equipment and vehicles, and compressor station emissions, which include carbon monoxide (CO), carbon dioxide (CO₂), methane, and nitrous oxide (NO_x); volatile organic compounds (VOCs); and particulate matter with an aerodynamic diameter less than or equal to 2.5 microns (PM_{2.5}). These air pollutants are known to increase the effects of asthma³¹ and may increase the risk of lung cancer (Nafstad et al., 2003). Due to high rates of asthma within the overall African American community, we consider this community especially sensitive” (FEIS Vol 4:512)



- ❖ Union Hill household data including revised population, race, and existing diagnostic health conditions, is in the public record to Buckingham elected representatives, 2016-17; to FERC in EIS public comments by Dr. Fjord and by Southern Environmental Law Center (SELC), 2017; by Dr. Fjord in 401 Water permit comments and NW12 Water Board comments, 2017-18.
- ❖ Updated household data (Sept. 3, 2018 updates):
 - 75 of 99 households reached for a 76.5% response rate, an outstanding rate in social science research.
 - 199 weekday residents; with hundreds more on weekends, bimonthly, etc.
 - 83% are minorities: African American, Native American/African American, Native American/White, Hispanic, and Asian
 - 17% are White
 - Children 0-17 are 32%; Elderly are 25%
 - For 67 households, we have listed in the table existing diagnosed health conditions that would be impacted by the combination of emissions applied for at BCS, including particulate matter, radon, volatile organic compounds, and list of EPA emissions DEQ lists in their draft air permit for ACP.
 - Known pre-existing diagnoses at Union Hill, include diabetes, asthma and other lung conditions, chronic bronchitis and pneumonia, heart conditions, breast and other cancers, COPD, lupus, kidney disease, epilepsy, multiple sclerosis, brain tumor, migraines from 35 households in our study who responded to this pre-existing health conditions question.

3. The Air Pollution Control Board must consider that so far at the local and state level no “site suitability” study and accurate report has been placed in the public record by Dominion for Union Hill CS 2 compressor station. At every phase of the application process, Dominion has been allowed by Buckingham Board of Supervisors, by FERC, and DEQ to perpetuate the myth that BCS is a “sparsely populated” place when it serves them:

- i. to locate compressor stations 200 miles apart, non-industry standard;
- ii. to have shut off valve distances at 14.7 miles apart at this site, which is not Pipeline Hazard and Safety Administration-PHMSA standards for this population size but for a “sparsely populated” site;
- iii. to allow highest PSIS of pressure at this site;
- iv. to locate the intersection of the existing 4-pipeline Transco corridor with the new ACP pipeline in the middle of a huge wetlands;
- v. where 100% of the drinking water is from the aquifer shared with that wetlands, from individual water wells. In FERC FEIS: “The EPA defines a sole source aquifer or principal source aquifer area as one that supplies at least 50 percent of the drinking water consumed in the area overlying the aquifer, where contamination of the aquifer could create a significant hazard to public health, and where there are no alternative water sources that could reasonably be expected to replace the water supplied by the aquifer (EPA, 2016a).” Yet, despite public knowledge that Union Hill and Buckingham generally has no access to municipal water, has only individual wells for 100% of their water, FERC FEIS states: “There are only two EPA-designated sole

source aquifers in Virginia, but neither is in proximity to ACP facilities” (ACP FEIS 4.3.1.2 Sole Source Aquifers 4-78).

- vi. Where adverse visual effects from a 125 ft. wifi transmission tower and a metering and regulatory station were suddenly no problem. The CS 2 is all at once NOT sparsely populated, not rural.
“AC 2 FERC FEIS: Visual Impacts: 4.8.8.3 Aboveground and Ancillary Facilities 4-422 “The Compressor Station 2 is in a more populated area of Buckingham County that may be visible to more residents. However, the compressor station is located near previously developed residential and commercial areas and is consistent with the existing visual conditions in the area.”
- vii. where A1 agricultural zoning was exempted for heavy toxic polluting new industrials complex;
- viii. where there is scarce internet access, yet ACP will build a 125ft. wifi tower with lights that will interfere with the night sky. At local special use exemption public hearing for wifi tower, Dominion would not consider request by Union Hill community members for access to wifi -- as the only community benefit;

Most egregiously, ACP’s application, the local Board of Supervisors, and FERC have allowed Dominion to:

- ❖ Erase impacts on a minority community, and its particular and now rare in Virginia historic Freedmen community still living where their ancestors were enslaved;
- ❖ Erased that history in its cultural resource report, **only filed after Advisory Council on Historic Preservation (ACHP) wrote a rare comment of concern** about that complete omission to FERC;
- ❖ Erases need for closer study of the health impacts on this minority community which FERC in its ACP FEIS states would be concerned if BCS were a majority African American community. “ But, FERC stated it is not, using ACP’s census data not the expert data submitted by Dr. Fjord and SELC on actual population;
- ❖ 29.6 persons per square mile allow Dominion to have 75% thinner pipes and up to 500% longer shut off valve distances. For the BCS, FERC FEIS states valve distances are 15.6 miles apart vs. 2 miles for most populated areas. These benefits to the developer at the expense of impacted residents must not go on.

Site Suitability for the BCS, must now be the responsibility of the Air Control Board and the Governor because of the slave plantation legacy in Buckingham.

- ❖ Deliberate erasure of Buckingham Slave history began in 1869 when vigilantes burnt the courthouse to destroy records of enslavement, fearing Buckingham’s 2:1 majority former slaves’ voting for restitution.
- ❖ In ACP process, African Americans who spoke out against the special use permit have faced reprisals.
- ❖ Friends of Buckingham has ensured that our baseline testing of existing ambient air conditions and individual well-water testing in Union Hill tests as full a range

of the contaminants found at CS sites from independent studies; and we use Virginia certified labs. Why is Dominion allowed to use non-certified labs and not required to test that range of contaminants?

Why BCS must have a full CHIA (Comprehensive Health Impact Assessment): pre-existing conditions in Union Hill community call for environmental justice study of minority health impacts. Where are the studies to assure that the passage of the Transco Pipeline through this portion of Buckingham is not contributing to these medical conditions?

We refer the DEQ and Air Control Board to Dr. Larysa Dyrszka's expert comment already filed within the public comment period. Of which these are the key points:

1. The Shale Health Impact Assessment (HIA) Template is designed to give a structured way to bring together data on the community potentially impacted, the expected emissions from shale gas or oil development, and the potential health risks posed to residents in the immediate area. This tool can provide decision-makers with a comprehensive perspective on the siting, expanding, or maintaining of a shale gas or oil compressor station.
2. A "tons per year" measurement associated with the assessment of risk to the public's health near a compressor station is an archaic method, and does not address exposure adequately. Also, the National Ambient Air Quality Standards (NAAQS) used as a benchmark for air quality were not created to assess the air quality and safety in a small geographic area with fluctuating emissions. NAAQS effectively address regional air quality concerns. **But these standards do not adequately assess risk to human health for residents living in close proximity to polluting sources such as compressor station sites, where emissions can be highly variable.**
3. Thus, **There are concerns about the adequacy and quality of the air modeling study:**
 - ❖ Current protocols used for assessing compliance with ambient air standards do not adequately determine the intensity, frequency or durations of the actual human exposures to the mixtures of toxic materials released regularly at compressor stations.
 - ❖ The typically used periodic 24-hour average measures can underestimate actual exposures by an order of magnitude. There remains the risk of serious harm to human health, including lung disease.
 - ❖ Reference standards are set in a form that inaccurately determines health risk because they do not fully consider the potential synergistic combinations of toxic air emissions. Thus estimates of yearly totals of contaminants released by a compressor station do not allow for an assessment of the physiological impact of those emissions on individuals. NAAQS reflects what, over a region, over time, is deemed safe population- wide. This is very different than what is safe within for instance 1200 feet of this compressor station. Averaging over a year can wash out important higher spikes in emissions (thus exposures) that may occur at various points throughout the year.

- ❖ What is needed is continuous, minute-by-minute data on a suite of surrogate compounds being emitted.

4. Health risks from relevant air contaminants receive inadequate treatment.

- ❖ From studies of compressor stations that “met” NAAQ standards, the following problems were notated: health impacts from hydrogen sulfide, PM_{2.5} or carbonyls.
- ❖ Hydrogen sulfide was monitored continuously, documenting the variability of potential exposures, along with the average. Spikes of H₂S were quite high. Southwest Pennsylvania Environmental Health Study (SWP-EHP) has similar findings from measurements of PM_{2.5} near compressor stations. Particulate matter is not included in DEQ concerns, yet must be.
- ❖ There are other levels and types exposure around compressor stations that raise health concerns. In particular, acetaldehyde, benzene, formaldehyde, carbon tetrachloride, chloroform, 1,2-DCA and 1,1,2-trichloroethane, crotonaldehyde, and 1-methoxy-2-propanone exceeded their respective comparison values (CVs).
- ❖ Mixtures of pollutants are a critically important topic in addressing the public health implications of compressor stations. In fact, a very large number of chemicals are released together. NAAQ and Medical reference values are not able to take the complex nature of the shale environment, its multiple emissions and interactions into full consideration. Some mixtures like particulate matter (PM) and volatile organic compounds (VOC) act synergistically to increase the toxicity of the chemicals.

5. The air permit treatment of Particulate Matter (PM) impacts in particular, but also of health impacts from compressors in general, is inadequate

- ❖ Particulate matter is known to impair lung function, aggravate asthma, cause high blood pressure and heart attack. PM can adhere with other compounds and then can carry these compounds, which may be toxic, into the deep lung and this is a health concern near compressor stations where multiple toxins are emitted with particulate matter (PM).
- ❖ Why is DEQ not adequately considering particulate matter, which will also be produced during the construction period, as well as daily during operations of BCS?
- ❖ Given that particulate matter (PM) causes respiratory damage and there are technologies available to scrub PM from air emissions, how can Dominion claim best available technology (BACT) if not scrubbing PM?

12. Radioactive waste is not considered in ACP air permit, we want it to be a state mandated emission concern. Because EPA region 3 reports that radium, measured as gross alpha and beta, in flowback water and produced waste in Pennsylvania wells, is significantly higher than in other shales.

- ❖ Graphs found in Dr. Dyrszka's comment -- from a USGS report -- illustrate the high radioactivity in Marcellus shale.
- ❖ Radon selectively and preferentially travel with the gas product, namely radon. As radon decays within the pipeline, the solid daughter elements, polonium and lead, accumulate along the interior of the pipes. There is a concern that the gas **transiting, and being compressed and regulated, will have radioactivity levels** which will put at risk not only the workers at these stations and along the pipeline, but potentially also to the residents. Radon, a gas, has a short half-life (3.8 days) but its progeny are lead and polonium, and these are toxic and have relatively long half-lives of 22.6 years and 138 days respectively.
- ❖ This air permit modeling does not address the potential health risks of the radon decay progeny.

13. **Sulphur Oxides and Hazardous Air Pollutants (HAPs) emissions seem to be higher in the 2018 permit application** when compared to 2017 estimates. How can Dominion claim best available technology (BACT) if they have selected new equipment that allows increases in these dangerous emissions?

14. Dominion's claim of best available technology (BACT) seems to involve selective capturing of methane, so how could DEQ assure these levels are lower to protect our health and reduce threats from climate change?

- ❖ Since climate change drilled down is daily and episodic direct impact from methane emitted -- plus all the other pollutants applied to for emission at CS #2, as they are breathed and drunk in water taken from 100% single source individual wells next to the CS #2 site?
- ❖ Methane is 86% more damaging to protective ozone than carbon dioxide. How does DEQ plan to require Dominion to accurately measure as well as to eliminate the release of methane into our community?

15. **Insufficient information about direction of air emissions** based on actual site conditions, rather than lab testing must be addressed

- ❖ Close by residents and those many miles away face new sources of large emissions that do have health impacts whether cumulative or by mixture.
- ❖ There air modeling done in laboratories have not been made clear enough to provide indicators of seasonal or daily peak exposures or minute by minute exposures based on geography.
- ❖ Many of our schools are within 10 miles of the compressor station. How will our children be protected?
- ❖ While baseline emission data from Roanoke, Hopewell, and other parts of the state might provide the best available baselines for air modeling, how can we be assured of the accuracy of pollution estimates, when the characteristics of these places are clearly different from Buckingham and DEQ is basing the majority of

these pollution estimates on unverified-in-real-life modeling outputs and laboratory testing?

- ❖ DEQ air modeling for the BCS is based on many assumptions about temperature, altitude, and other factors that are not accurate for Buckingham. Why was field data not collected? How can you assure test results and thus pollution estimates are accurate?
- ❖ How do you adjust for seasonal variability when assessing impacts of toxic pollutants on human health? For example, how do you take into account the higher exposure level of emissions that occur during the colder months when they stay closer to the ground?
- ❖ The "emergency" gas turbine, which raises the combined horsepower closer to 57,000 is intended for winter months. How is this accounted for in the air permit? Can we be assured that use of "emergency" is not being used to "hide" higher levels of emissions in winter

16. Please share with us the data documenting the current ambient air quality. What is the difference between the ambient air quality now in the air around the proposed project and what ACP applies to add to BCS site's present "higher than normal" air quality (quotation from ACP's "failed air permit"?)

17. ACP compressor stations do not follow industry standard for spacing: Since the recommended distance between compressor stations is usually less than 100 miles, why is the distance between ACP compressors so great, particularly since it concentrates dangerous pollution in the Union Hill and Woods Corner neighborhoods?

- ❖ Given that industry standard is to have compressor stations at shorter intervals, distributing risks and hazards more evenly over transmission distances. How does ACP explain that they have only one compressor station per state, and therefore these are very large and impactful as needed to provide the pressure to cover 200+ miles between CS #1 and CS #2 and CS #2 and CS #3?
- ❖ Given Dominion's past actions in other locations, we can anticipate that this compressor station will be expanded in the future. Unless the company can be prohibited from expanding in the future, why is this facility not considered a major source of pollution now so stronger standards are applied?

18. **Who Pays the true costs of these harmful emissions on health?** If community members get sick as a result of toxic emissions from the compressor station like formaldehyde, benzene, and hexane, would they be forced to sign non-disclosure agreements before receiving help with medical bills from Dominion Energy or Williams Transcontinental (Transco)?

19. **DEQ must require Dominion provides warnings for scheduled blowdowns.** How will nearby residents who have health issues be given sufficient time to leave the area

until the pollutants are reduced? How long will they have to plan to be away from the area to protect their health? What conditions might affect that time?

Local Emergency Response Capacity – it matters to emissions issues

20. We are worried about the inadequacy of local emergency response services in Buckingham and the highly pressurized, toxic, explosive, and flammable nature of the materials at BCS and in other ACP infrastructure. How will the state assure the safety of local residents?
21. How will Dominion use local knowledge of limitations in emergency response to make our system more robust? How can we be assured Dominion will not be allowed to set a standardized evacuation process that does not fit our local challenges and characteristics?
22. Many compressor stations start without clear evaluations plans. We know people currently living with compressor stations that have no local emergency plans. FERC does not enforce their provision. What steps can we take if Dominion Energy's promised evacuation plans are inadequate to assure public safety?

New Technology promises without warranty

23. The SOLAR manufacturer does not warranty or guaranty emission reductions in real life will approach levels found in modeling tests. SOLAR suggests any estimates must be treated as a range contingent on local variables. Given this careful language and the direct precaution in the SOLAR's sales materials warning against using their estimates in permitting decisions, why has there not been additional independent verification to assure estimates are accurate for Buckingham's local conditions?
24. Since the new "green" technology Dominion bases their predicted emissions on has never been tested in the field and is taken from manufacturers' laboratory results under generic conditions, is it not the best practice to hold the air permit application until the new technology has been tested in similar situations? For example, some of the proposed emissions controls have only been used with small turbines dissimilar to those proposed for BCS, isn't additional testing and use required before we can trust the manufacturer's claims?

Increased Gas transmission and emissions without community knowledge?

25. Could ACP increase the amount of gas compressed in the BCS in the future without additional air permitting?
26. Can increases in Transco gas compression in Buckingham move through the compressor without being regulated in an air permit?
27. Would impacted residents be consulted prior to future decisions about increases in gas transportation through the BCS or can DEQ approve increases without community knowledge or input?

Respectfully submitted,
Lakshmi Fjord, PhD.

Resources for the Air Control Board on fracking and health impacts

Physicians for Social Responsibility-PSR, Philadelphia has designed an innovative training event on fracked gas and its health effects. The event is a “speed learning” event using the PechaKucha technique of multiple, extremely brief presentations: 20 images at 20 seconds each.

As the event will be live-streamed, I urge you to sign up now and tune in to the event, Saturday, October 13, 9 am – 4 pm eastern time. and registration:

- Website (<https://www.psrphila.org/pa-health-check-up-series>)
- Registration Form (http://weblink.donorperfect.com/pa_health_checkup1)

References Cited

Executive Order 12898 - Federal Actions to Address Environmental Justice in Minority Populations and Low-Income Populations, 59 FR 7629; February 16, 1994

<https://www.epa.gov/laws-regulations/summary-executive-order-12898-federal-actions-address-environmental-justice>

Environmental Justice Guidance Under the National Environmental Policy Act

Council on Environmental Quality, Dec. 10, 1997

<https://www.energy.gov/nepa/downloads/environmental-justice-guidance-under-nepa-ceq-1997>

Fjord, Lakshmi Ph.D. 2018. *Summary Report, Cvllle People's Tribunal on Human Rights and Environmental Justice Impacts of Fracked Gas Infrastructure (ACP and MVP)*, presentation and document submitted to the International Peoples' Tribunal on Human Rights, Fracking, and Climate Change, May 14-18, 2018 ([tribunalonfracking](http://tribunalonfracking.com))

[All Cvllle People's Tribunal publications, testimonies, and videos available at: vapeopletribunal-humanrightsenvironmentaljusticeimpactsfrackedgas.com]

Fjord, Lakshmi, Ph.D. 2015 – 2018. Written and Oral Public comments in the public record

1. Buckingham Board of Supervisors, expert comment on ACP issues related to health, economics, jobs, race, and history, March 9, 2015, by mail.
2. FERC, intervenor, request for consulting party status, public comment, Union Hill Historic Preservation Act Section 106 violations by ACP, June 2, 2016, submitted online
3. FERC, intervenor, request for consulting party status, public comment, Yogaville Historic District, HP Section 106 issues by ACP, June 2, 2016, submitted online
4. Buckingham County, Planning Commission, Sept. 9, 2016
5. Buckingham County, Board of Supervisors, Special Use Permit Public Comment period and hearing, January 3, 2017.
6. FERC DEIS Written public comment, filed April 6, 2017; submitted online at FERC.
7. FERC DEIS Public Hearing, Farmville, VA,
8. VDEQ 401 Water Permit Public Comment filed August 22, 2017; emailed and sent by mail.
9. VDEQ 401 Water Permit Public Hearing, Farmville, VA, August 10, 2017; in person.
10. VDEQ Buckingham Compressor Station Air permit public comment, online.

PHMSA - Pipeline and Hazardous Materials Safety Administration, <https://www.phmsa.dot.gov/>



Air Division 1, rr <airdivision1@deq.virginia.gov>

TO: Ms. Ann Regn - My Comments on the Proposed ACP Buckingham Compressor Station

1 message

John Fringer <jfringer3@verizon.net>
To: airdivision1@deq.virginia.gov
Cc: Helene Shore <teachhss@aol.com>

Thu, Aug 16, 2018 at 3:28 PM

Dear Ms. Regn,

Please accept my comments (attached) on the subject Compressor Station.

Sincerely,

John H. Fringer, P.E.

11909 Moss Point Lane

Reston, VA 20194-1728

phone: 571-246-6443 (cell)

703-435-2198 (h)

fax: 801-841-7818

e-mail: jfringer3@verizon.net



Buckingham Cnty Compressor Sta 8-16-18.docx
19K

11909 Moss Point Lane
Reston, VA 20194-1728
phone: 571-246-6443 (cell)
703-435-2198 (h)
fax: 801-841-7818
August 16, 2018

Ms. Ann Regn
Piedmont Regional Office
Virginia DEQ
Buckingham Compressor Station
4949-A Cox Road
Glen Allen, VA 23060

Dear Ms. Regn,

As a retired environmental engineer and chemist, I am adamantly and urgently opposing construction of the proposed Buckingham County Atlantic Coast Pipeline compressor station. Although the problems of noise emissions, risk of explosions, and the impacts to surrounding air quality, groundwater, and wildlife and their habitat are certainly very harmful and disturbing, the biggest impact is the amount of methane emitted.

The U.S. EPA estimated¹ that methane accounted for “only” 10% of the U.S. Greenhouse Gas Emissions in 2016. However, methane’s global warming potential (GWP) is 86 times² that of carbon dioxide (CO₂) over 20 years. (Although the EPA and the IPCC use methane’s 100-year GWP of 26-34, that number makes no scientific sense³ in light of methane’s lifetime in the atmosphere of 12.4 years².) It is certainly a mistake to underestimate methane’s GWP and its short-term impact on global warming, especially considering how close we are to some carbon feedback loop tipping points. Recent scientific papers indicate that “global warming’s worst-case projections look increasingly likely”⁴. The IPCC’s Climate Change 2014 Synthesis Report⁵ stated that “There is a high risk of substantial carbon and methane emissions as a result of permafrost thawing.” Because global greenhouse gas emissions are still increasing (they increased by 2% in 2017⁶), we can expect not only more “hyperactive hurricanes” and “massive wildfires” but also the immediate threats of faster melting of the Summer Arctic Sea Ice and the Greenland and West Antarctic Ice Sheets, which will cause more sunlight to be absorbed, leading to (not only rising sea levels, but) more accelerated warming and melting of the arctic permafrost, which will release even more CO₂ and methane, as well as more than 15 millions gallons of mercury⁸.

¹ Per <https://www.epa.gov/ghgemissions/overview-greenhouse-gases>

² Per Table 8.7 of http://www.climatechange2013.org/images/report/WG1AR5_Chapter08_FINAL.pdf

³ Per <https://www.scientificamerican.com/article/how-bad-of-a-greenhouse-gas-is-methane/>

⁴ Per <https://www.technologyreview.com/s/609620/global-warmings-worst-case-projections-look-increasingly-likely/> and <https://www.nature.com/articles/nature24672>

⁵ Per p. 67 of https://www.ipcc.ch/pdf/assessment-report/ar5/syr/SYR_AR5_FINAL_full.pdf

⁶ Per https://www.nature.com/articles/s41558-017-0013-9.epdf?referrer_access_token=clvITR7fMhcgwE0bx8PB7NRgN0jAjWel9jnR3ZoTv0MPTCfJUE3ksFmZmzoQEYcQk-1mQqwS7BiPIUuAOmIcmWrf4Loxm_sqSthI7wnuZT3tBaPiMLg_hIXEbcChC614jflyl-jR8pr0erVruunVyBRj5r6KtGAd6xIbEEBQmmx-DBYsgbv1xKaUHTGvXDforC0xAi3q2rITm7L3n3BzRi1I3OszqggWK244uO3GpEtebT5xE1EtBrdUV_H8A2-1r40VNnfElzIReWbcY_IP-bw5fn7TUapKGDqyS2xrs%3D&tracking_referrer=www.technologyreview.com

⁷ Per <https://www.technologyreview.com/s/609642/the-year-climate-change-began-to-spin-out-of-control/>

Although natural gas emits 51-57% of the CO₂ as coal when burned, it's obviously not an environmentally friendly "bridge fuel"⁹. I am familiar with the argument the energy alternatives analysis in environmental impact statements that renewable energy supplies only 10% of the energy of "baseload" power sources, such as coal and natural gas. However, that number underestimates combined influence of energy conservation and the increased efficiency (and decreased cost) of rooftop solar panels, as well as recent developments in other renewable energy sources, such as wind and geothermal. However, the grave impacts of runaway climate change (leading to a "hothouse earth"¹⁰) trump all other reasons for halting the use of fossil fuels.

We therefore must immediately halt the construction of this compressor station and its connecting pipeline if we are to have any hope of preventing or mitigating the most disastrous scenarios of runaway climate change.

Sincerely,
John H. Fringer, P.E.

⁸ Per <https://www.scientificamerican.com/article/the-arctic-permafrost-holds-a-crazy-amount-of-mercury-mdash-and-thats-bad-news/>

⁹ <https://www.climaterealityproject.org/blog/3-big-myths-about-natural-gas-and-our-climate>

¹⁰ <http://www.pnas.org/content/early/2018/07/31/1810141115>



Air Division 1, rr <airdivision1@deq.virginia.gov>

air compressor station in Buckingham/Union Hill

1 message

Pam Gibson <pgibson93@gmail.com>

Sun, Sep 16, 2018 at 1:44 PM

To: airdivision1@deq.virginia.gov

Please find my letter attached.



Buckingham Compressor Station for the.docx

140K

DEQ, Piedmont Regional Office
Re: Buckingham Compressor Station for the
Atlantic Coast Pipeline Air Quality Permit
E-mail: airdivision1@deq.virginia.gov

Dear Members of the Air Pollution Control Board:

There are so many levels of concern regarding the Atlantic Coast Pipeline and its proposed compressor station in the historically black area of Union Hill that it is hard to know where to begin.

First, we are asked to accept a project from a company that has contaminated Virginia repeatedly, for private gain that violates both the clean air and clean water acts, and also involves the taking of people's private property. This applies to the entire project and we daily see our citizens arrested, fined, and mishandled for attempting to protect their own beloved property.

Second, it is well-known that the project is clearly not needed to supply energy in the US, but is rather an export project timed to take advantage of the industrialization of India and the decimation of the power grid in Japan.

Third, even if we do not build this project, we will be hard-pressed to meet even the deficient standards set by the Paris Accords to offset the dire circumstances that are quickly advancing on us due to global warming. This project takes us in the extreme wrong direction and all climate scientists know it. We know it too.

Your job as our air quality board is clearly stated as follows:

The Air Board, in approving permits, "shall consider facts and circumstances relevant to the reasonableness of the activity involved," including:

1. The character and degree of injury to, or interference with, safety, health, or the reasonable use of property which is caused or threatened to be caused;
2. The social and economic value of the activity involved;
3. The suitability of the activity to the area in which it is located; and
4. The scientific and economic practicality of reducing or eliminating the discharge resulting from such activity.

Code of Virginia § 10.1-1307.E.

It is sad that citizens have to write again and again and that the Dominion Pipeline Monitoring Coalition had to be the one to even analyze the many comments that DEQ failed to even forward to the water board.

The environmental justice concerns regarding air quality and the compressor station are enough to make one weep. One would have to look very hard to find another black community such as Union Hill in Virginia. Consider a situation where the descendant of slave owners sells land to a greedy corporation that will build a seriously polluting facility on land that has been

owned by the descendants of slaves for generations. Consider the health effects of compressor stations that are well known and include a multitude of concerns such as asthma, cardiac issues (particulates), and many others. Consider the noise. Consider the sights. Would you do this to your neighborhood? Would you want it for your children? Are you reading this? Are your investments in Dominion?

You as the air board are one of the ONLY chances present for the people of Union Hill to dodge the bullet of this compressor station. Our governor is bought and paid for and will not help. DEQ itself is so suspect that no one trusts them.

Governor Northam's own Advisory Council on Environmental Justice (ACEJ) found evidence that ACP would have disproportionate impacts for people of color and for low-income populations due to gas infrastructure expansion.

If even his own council knows that the compressor station is a bad idea, why are we even having this conversation? As I write this people are posting horror scenes of erosion and sedimentation destroying beautiful areas of Southern Virginia. They are ignored. People are protesting these projects in every way possible. They are ignored. New anti-pipeline candidates are running for congress. They are NOT ignored.

Please be on the right side of history and do not issue an air permit for this ill-conceived project.

Sincerely,

Pam and Royce Gibson (please read twice for both of us)

P.O. Box 735

Churchville, VA 24421



Deny the Buckingham Compressor Station air permit

1 message

Kathlynn Grant <kmgrant804@gmail.com>
 Reply-To: kmgrant804@gmail.com
 To: airdivision1@deq.virginia.gov

Tue, Sep 18, 2018 at 10:09 PM

Director of Publ

State Air Pollution Control Board
 c/o Ann Regn, Director of Public Information and Outreach
 Virginia Department of Environmental Quality
 Phone: 804-698-4442
 Email: airdivision1@deq.virginia.gov
 Fax: 804-527-5106

Dear Director Paylor and members of the Air Pollution Control Board,

I respectfully urge you to deny the draft minor source air permit for the Atlantic Coast Pipeline's Buckingham Compressor Station.

This compressor station poses a direct threat to our climate, our air quality, and - most importantly - to the lives of the historic freedman and largely African American Union Hill community. If built, the compressor station would emit methane, nitrogen oxides, volatile organic compounds and particulate matter into the air in close range to community members' homes and would be a stark example of environmental racism at play in the Commonwealth.

We ask that you deny this permit and request that the following concerns be addressed:

- DEQ and the Air Board must ensure that the permit for the Buckingham Compressor Station does not disproportionately impact marginalized communities. However, the vast majority of residents in close proximity to the proposed compressor station site - 85% - are people of color, and a large proportion are elderly or very young. Therefore, a disproportionate impact on an environmental justice community is virtually guaranteed. If the project cannot be modified to avoid this outcome, the air permit should be denied.
- ACP has not shown that the amount of toxic air emissions from the compressor will not cause or contribute to the endangerment of human health. DEQ should conduct a baseline Health Impact Assessment to better understand what ailments already exist in the community that could be exacerbated by these emissions. The elderly, very young, and community members who already have respiratory health issues are particularly at risk.
- DEQ should require ACP to continuously monitor nitrogen oxide emissions to ensure ACP is complying with the nitrogen oxide emissions limits at all operating periods. The currently proposed stack testing is not sufficient to ensure compliance with the draft permit conditions.
- DEQ should conduct further analysis of the greenhouse gas emissions associated with this proposed compressor station. While Virginia is poised to begin regulating carbon dioxide emissions from electric power plants, ignoring the greenhouse gas emissions from the infrastructure used to supply those power plants is self-defeating. With each new pipeline and compressor station built, significant amounts of methane are emitted into the atmosphere, exacerbating climate change impacts. Though methane does not last in the atmosphere nearly as long as carbon dioxide, methane is much more efficient at capturing radiation than carbon dioxide and, pound for pound, the comparative impacts of methane to carbon dioxide are 25 times greater over a 100 year period. Greenhouse gas emissions are mentioned in the draft air permit, but further analysis of impacts and plans to mitigate those emissions are necessary.
- ACP has not adequately addressed emergency response plans. Detailed plans should be drafted and shared with the community. These plans should outline evacuation and actions in response to an explosion or other emergency at the Buckingham compressor station. At this time, there is no certainty that residents could be evacuated promptly, and Buckingham County emergency responders do not have the supplies or resources to respond to a significant industrial emergency.

It is extremely important that the Air Pollution Control Board defend Union Hill, Buckingham County, and all Virginians' air and climate from the harmful impacts associated with this compressor station. I urge you to deny the permit.

Sincerely,

Kathlynn Grant
 787 49th Ave N
 St Petersburg, FL 33703
 7272692323



Air Division 1, rr <airdivision1@deq.virginia.gov>

Air Quality Permit Buckingham Compressor Station

1 message

Thomas Hadwin <tzhad13@gmail.com>

Tue, Sep 4, 2018 at 6:24 PM

To: airdivision1@deq.virginia.gov

DEQ - Air Division

Attached are my comments regarding the following:

PERMIT NAME: Minor Source Construction Permit issued under the authority of the Air Pollution Control Board

APPLICANT NAME AND REGISTRATION NUMBER: Atlantic Coast Pipeline, LLC; 21599

FACILITY NAME AND ADDRESS: ACP – Dominion Energy Buckingham Compressor Station; 5297 S. James River Hwy,
Wingina, VA 24599

Respectfully submitted,

Thomas Hadwin

Former electric and gas utility executive

328 Walnut Avenue
Waynesboro, Virginia 22980
540 256-7474**Hadwin-Comments_Air-Quality-Permit-Buckingham-Compressor-Station.docx**

22K

Comments Regarding

Permit: Minor Source Construction Permit issued under the authority of the
Air Pollution Control Board

Applicant Name: Atlantic Coast Pipeline, LLC

Permit Number: 21599

Facility Name and Address: Atlantic Coast Pipeline – Dominion Energy

Buckingham Compressor Station 5297 S. James River Hwy, Wingina, VA 24599

I served as an executive for an electric and gas utility and led a department that was responsible for obtaining state and federal approvals for multi-billion dollar utility projects. Each permitting process, at the state or federal level, begins with establishing the need for the proposed project and then progresses to an evaluation of the economic and environmental effects resulting from its development. The Department of Environmental Quality, if following federal law that delegates responsibility to Virginia for permitting air quality emissions under the Clean Air Act, has a similar responsibility.

The Federal Energy Regulatory Commission (FERC) never addressed the need or public benefit of the Atlantic Coast Pipeline, even though they issued a certificate that makes it appear as though they did. The Commission looked only for the existence of contracts between the pipeline and organizations that have reserved capacity on the pipeline. All but 6% of the reserved capacity on the pipeline is allocated to companies that are controlled by the owners of the pipeline.

The Commission has guidelines that say contracts between pipeline owners and their affiliates are not necessarily an indication of true market demand, and that contracts with affiliates deserve greater scrutiny. But FERC has never followed those guidelines in their approval of all but two of over 400 applications to build new gas transmission pipelines in the last 20 years. Project developers continually claim that this is the most thoroughly reviewed project in our region, but fail to mention that the federal regulator made no independent evaluation of whether the project was actually necessary or would serve the public's interest.

This lax approach on the part of FERC has resulted in the addition of new pipeline capacity over the past 20 years that is twice our peak national gas usage in 2017. And

those additions were on top of all of the pipeline capacity that was built in the U.S. during all of the 20th century.

The Atlantic Coast Pipeline claimed that nearly 80 percent of its capacity would be required for new power plants planned for Virginia and North Carolina. Dominion has canceled all of the major gas-fired power plants it planned to build when the pipeline was announced. They have confirmed that they have no plans to build any more of that type of unit. Four of the six new power plants originally planned for North Carolina have been canceled.

The two plants that remain are projected for the early to mid-2020s and are supported only by over-optimistic forecasts for future electricity use. They have not been approved by the North Carolina regulator. It is likely that they will fall to the same shift in economics for gas-fired plants that caused the cancelation of the other units.

Although Dominion no longer has a need for additional gas supply in Virginia, it still expects to pass on to its customers the full cost of the 20-year \$4 billion contract that its subsidiary signed with the Atlantic Coast Pipeline. The contract requires that the full cost be paid even if only a portion or none of the reserved capacity is used.

Virginia Natural Gas customers are also expected to pay over \$2 billion for its capacity reservation. Subsidiaries of Duke Energy will be expected to reimburse the pipeline more than \$12 billion over the next 20 years. This will be very profitable for the utility holding company owners of the pipeline, but it will be a very bad deal for the ratepayers of their utility subsidiaries. Utility customers would save billions if the utilities chose to access the abundant gas supplies that are available from existing pipelines.

Billions of dollars will be extracted from families and businesses in Virginia for a project that is completely unnecessary. Several years ago, an independent study by Synapse Energy Economics showed that the approved expansions of existing pipelines that have served this region for decades could provide all of the gas we need and more. All of the new power plants that were originally proposed could have been accommodated, as well as an even higher gas usage scenario.

The Atlantic Coast Pipeline will be the most expensive pipeline on the east coast. Transporting gas on the ACP will add more than a 60% premium to the current price of gas. Existing pipelines can provide more capacity and will transport gas 3-8 times cheaper than can the Atlantic Coast Pipeline. Existing pipelines are less expensive to use because they have been mostly paid for by previous users. It makes sense to use what we have before building something new.

With little remaining demand for its capacity, the owners of the Atlantic pipeline will likely seek to use it to export gas. Dominion's executives in South Carolina have been telling customers for three years that the ACP will extend over the border from North Carolina to connect to Dominion's gas transmission system in South Carolina. An existing connection to the Elba Island LNG facility would be used to export gas when the export facility begins service by the end of 2018.

Transco, the largest pipeline system in the nation, runs from New York down along the eastern seaboard all of the way to the Gulf Coast. It has served Virginia, and all of North Carolina's gas needs, and most of South Carolina's for many decades. Transco filed a motion with the South Carolina Public Service Commission to say that the Atlantic Coast Pipeline is unnecessary and duplicates the more than adequate capacity that Transco provides.

Commissioner LaFleur, a former utility executive who has served FERC for over eight years (several years as Chairman) agreed. She dissented with FERC's approval of the Atlantic Coast Pipeline saying that it was not in the public interest. She was over-ruled by two newly appointed Commissioners who had been on the job just a few months when the decision was rendered.

Several years ago, Congress retained a consultant to investigate the economic impacts of exporting liquefied natural gas (LNG) from the United States. The consultant's report stated that "U.S. natural gas prices increase when the U.S. exports LNG."

The Industrial Energy Consumers of America assessment of the report concluded that "U.S. LNG exports would reduce wages and disposable income, increase energy prices, curb investment in the U.S. economy (less investment in manufacturing), and that owners of the resource base would benefit. Said another way, owners of the natural gas resource will benefit, while the vast the majority of people in the country will lose economically."

Traditional uses of natural gas are not expected to increase much. Gas used to produce electricity is likely to increase a bit over the next few years then begin to taper off. The primary source of new gas demand in the U.S. will be from exports, over 80% according to Forbes.

There is a problem with sending our cheap gas overseas. Shale gas wells reach peak production within about three years then rapidly decline. We are using the most productive wells first. It will cost more to get gas from the next group of wells. An industry insider once said, "We can have cheap gas, or plentiful gas, but we can't have plentiful supplies of cheap gas."

Australia has already traveled the road we are just embarking on. In the 10 years since they began exporting their plentiful supplies of low-cost gas, Australia's domestic gas prices rose 300% to 400%. Manufacturers closed their doors or switched back to coal. Utility bills skyrocketed. Domestic consumers suffered because public policymakers failed to take care of the people whose interests they were supposed to represent. Following this path will squander a strategic asset for the short-term profits of a few energy companies.

In the last few 15-year plans, Dominion has projected that gas prices would double or triple within the next 10-15 years from their current \$2.50 - \$3.00 price. This would increase the prices of energy produced by Dominion's recently built gas-fired plants by 50% - 100%. Gas and electric customers throughout the state will pay more because of the higher gas prices created by aggressive exports.

It does not make sense for Virginia to approve permits for projects that will increase profits for a few private companies while increasing energy costs for families and businesses throughout the state.

Although Buckingham County is served by a utility co-operative, higher gas prices will affect all of Virginia's utilities. And Dominion is a major provider of the electricity used by the co-ops throughout the state.

This is a double insult to the residents of Union Hill. Not only have they been targeted to endure the impacts of the compressor station that the project developers expect they will have little ability to oppose. But lower-income residents pay a much higher portion of their income for energy costs than most other families do. Higher energy costs created by this unnecessary project will affect them the most.

This air quality permitting activity must take into account the fact that there is no net economic benefit to the general public that would offset the harm that would result from the development of this mammoth compressor station. You would be permitting an activity that would lead to billions in added energy costs for the citizens of Virginia. A regulator's statutory duty is to weigh the benefits of a project against its costs and impacts. This duty has so far been overlooked in the DEQ's handling of the water quality issues. It is now your duty to speak on behalf of Virginians to determine that the billions in added energy costs to families and businesses in Virginia and the local impacts borne by citizens in Buckingham County far outweigh the profits to a few energy companies from an unnecessary pipeline.

Respectfully submitted,

Thomas Hadwin

328 Walnut Avenue
Waynesboro, Virginia 22980
540 256-7474



Air Division 1, rr <airdivision1@deq.virginia.gov>

Comments on 21599- ACP/ Buckingham Co. Compressor Station

1 message

Benjamin Hoyne <ben@virginiaclinicians.org>

Tue, Sep 11, 2018 at 1:27 PM

To: airdivision1@deq.virginia.gov

Greetings,

Virginia Clinicians for Climate Action would like to submit the attached comments on behalf of project 21599, Atlantic Coast Pipeline, LLC- Buckingham County Compressor Station in Buckingham County, Virginia.

Thank you

—

Ben Hoyne, MA (Env. Policy), MBA

Consultant/ Director

Virginia Clinicians for Climate Action

ben@virginiaclinicians.org

804-349-3671

Richmond, VA

@VA_Clinicians

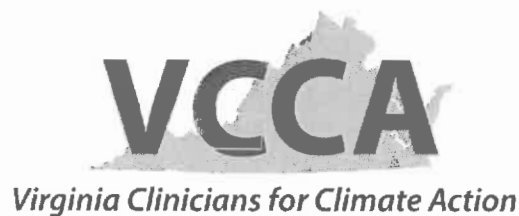
www.VirginiaClinicians.org

A network of clinician leaders that advocate for solutions to the health effects of climate change.

"Our most basic common link is that we all inhabit this small planet. We all breathe the same air. We all cherish our children's future. And we are all mortal." - John F. Kennedy

**21599.VCCA.DEQ.AirBoard.9.11.18.pdf**

98K



Virginia Department of Environmental Quality
Piedmont Regional Office
4949-A Cox Rd
Glen Allen, VA 23060

September 11, 2018

Dear Members of the Air Pollution Control Board:

Representing the Virginia Clinicians for Climate Action (VCCA) we urge you to consider the health impacts of the proposed Atlantic Coast Pipeline Buckingham Compressor Station.

As physicians we know that our patients cannot be healthy if the air, water and soil are contaminated with pollutants. The draft permit and air modeling report for the compressor station do not assess or comprehensively consider health impacts and fail to adequately protect vulnerable at risk populations who reside near the proposed compressor.

The majority of the population surrounding the proposed compressor station is African American and includes both the elderly and children who are more vulnerable to air pollutants, especially particulate matter. We do not know the specific health status of nearby residents, as a comprehensive health impact assessment is not part of the regulatory process.

The American Lung Association does report that of the 17,048 residents of Buckingham County there are 255 children and 1,190 adults with asthma, 896 people with COPD, and 1,237 patients with cardiovascular disease. Along with the greater than 3,000 children and 3,000 adults over 65, these populations are all at risk from air pollutants.

The air modeling report conducted concludes that health will be protected because the levels of the modeled pollutants do not exceed the National Ambient Air Quality Standards (NAAQS). When considering health impacts, applying regional air quality standards will not be sensitive enough to assess the risks to people who reside within a mile or two of the compressor station, as the closest air monitoring station is approximately 62 miles away.

In the context of drilling, concern has been raised about whether the ambient air standards are sufficient to address risks due to the episodic release of pollutants.¹ Ambient air monitoring does not capture the intensity, duration, and frequency of exposures. This concern also applies to people in close proximity to compressor stations where shutdowns, blow downs, fugitive emissions are also episodic. Sensitive and vulnerable populations, like the residents of Union Hill are at increased risk to these exposures and should be protected.

The permit will allow 190.3 tons of air pollutant emissions in this vulnerable neighborhood. Other hazardous air pollutants and toxics will also be emitted from the compressor station, but are not described in the permit, as they do not rise to the level regulated in Virginia statutes.

We know that exposure to air pollution leads to excess asthma events, excess respiratory and cardiovascular disease and diminished quality of life.

We ask you to consider the health and safety of the residents of Union Hill and take appropriate action to protect their health by denying the permit or including requirements for fence line monitoring to insure that the air quality standards are achieved on an hourly basis year round.

You have a unique opportunity to prevent harm that will inevitably be caused by this compressor station. We request that you take action to eliminate, reduce or mitigate the risks from emissions at the Buckingham Compressor Station. The safety and health of nearby residents should guide your consideration of the air permit.

Thank you for your consideration,

Virginia Clinicians for Climate Action

¹ American Lung Association, State of the Air 2018. <http://www.lung.org/our-initiatives/healthy-air/sota/city-rankings/states/virginia/buckingham.html>

Accessed 8/23/2018

² Brown, D et. al. Understanding exposure from natural gas drilling puts current air standards to the test. Rev Environ Health. 2014;29(4): 277-92.

¹ Brown, David, et.al. Understanding exposure from natural gas drilling puts current air standards to the test. Reviews on Environmental Health 2014; 29 (4): 272-92.



Air Division 1, rr <airdivision1@deq.virginia.gov>

Extend Comment Period for the Buckingham Compressor Air Permit

1 message

Pamela Jiranek <pjiranek@comcast.net>

Thu, Aug 30, 2018 at 11:13 AM

Reply-To: pjiranek@comcast.net

To: airdivision1@deq.virginia.gov

The concept of "tzedek" comes from the Jewish faith tradition, calling for justice and equity among all people. The vision of tzedek is one of environmental justice and clean and safe air for all to breathe. The proposed Atlantic Coast Pipeline (ACP) compressor station violates this concept as it would expose residents in Union Hill and Buckingham County to leaking pollutants such as methane gas, formaldehyde, benzene, arsenic, uranium and additional toxic volatile organic compounds (VOCs).

This 54,000+ horsepower compressor station is one of the largest that Dominion has ever built and the largest in Virginia, further endangering health of residents and increasing risk and vulnerability. Having clean air is a fundamental human right and is especially vital for children and the elderly, some of the most vulnerable to the negative impacts of inhaling pollutants.

Many of the world's major faith traditions have a mandate to care for the Earth. By doing so, we care for each other. I submit this comment with love to express my solidarity with the community of Buckingham and their health and safety concerns stemming from the construction and operation of this massive compressor station.

I urge the VA State Air Pollution Control Board and the Department of Environmental Quality (DEQ) to extend the 30-day comment period to at least 60 days, to ensure meaningful participation by impacted populations in permitting and monitoring, and to immediately complete a thorough Quantitative Risk Assessment (QRA) and a Comprehensive Health Impact Assessment (CHIA) prior to any future permitting.

I further urge the VA State Air Pollution Control Board and the DEQ to abide by the principles of environmental justice as the compressor station is proposed to be sited in Buckingham County's historic Union Hill, an 85% African American community. It is unacceptable that our society continues to disproportionately burden the poor and people of color with increased levels of dangerous air pollution.

Being unable to take a deep breath of clean air to pray or meditate at the many nearby religious sites such as Union Hill and Union Grove Churches and the LOTUS Temple, one of the many sacred places in Satchidananda Ashram Yogaville, is an egregious violation of humanity.

The risks to our sacred gift of air posed by Dominion's proposed ACP compressor station are simply too high.

Mrs. Pamela Jiranek
400 Forest Ridge Rd
Earlysville, VA 22936
4342021724

**Draft Minor New Source Review Permit - Buckingham Compressor Station**

1 message

Marilyn Karp <marilynkarp@gmail.com>

To: airdivision1@deq.virginia.gov

Sun, Sep 9, 2018 at 12:18 PM

I ask that the public comment period be extended, as residents have had mere weeks to analyze a landslide of technical information about this massive project.

I request that the Department of Environmental Quality complete a Quantified Risk Assessment (QRA) for the Buckingham Compressor Station prior to permitting and to work with other state agencies to conduct a Health Risk Assessment (HRA) and a Health Impact Assessment (HRI).

I have the following: LINGERING CONCERNS REQUIRING ADDITIONAL ANALYSIS

1. Toxic formaldehyde and hexane levels remain high.
2. Baseline locations for comparison of air emissions are problematic (e.g., Hopewell, Harrisonburg, Richmond, Charlottesville, Roanoke, etc.). Documents argue they used the best available comparative location for each specific emission under analysis, but circumstances are dissimilar.
3. The projected/estimated reductions of emissions come from manufacturers' estimations from lab studies and not from any existing compressor facility (i.e., these are "DESIGN VALUES" and "PERFORMANCE PREDICTIONS" only). Some of the NOx reduction technology seems to have only been used on small turbines.
4. The technology proposed is unproven—the Union Hill community is being treated like guinea pigs without Dominion and ACP being clear in public statements that all claims of reductions are hypothetical and not based on actual operation or testing of equipment. There is very little evidence for proposed reductions outside of computerized air models, which have not been independently verified.
5. While claiming use of Best Available Technology, there are emission reduction devices and procedures discussed in Dominion's Methane Management Report are NOT discussed in the air permit application
6. In answers to requests for information, Dominion admits that they will pollute up to mandated limits (e.g., VOC emission limit of 2.7 tons annually). They suggest they will add expensive additional controls only if and when they approach annual limits. This shows that they have technology available to reduce more, but suggests they prefer to pollute because it is more profitable.
7. If there is a leak of some sort at the compressor station, compressor station operators have 30 days to fix it. They could delay fixing it if they think the shutdown emissions would be greater than the leak.
8. The size of the ammonia tank has increased over time from 8,000 gallons to 13,400 gallons.
9. The air permit does not address the proximity of wetlands and other site impacts deemed irrelevant to an air permit but important when considering overall environmental impact. Will they be addressed in another way or another permit? What, if any, other regulatory processes remain?

On a personal note as one human being to another. Your membership qualifications state: "The Governor appoints seven Virginia citizens to serve as board members. The selection is based on merit without regard to political affiliation. Members shall, by their education, training, or experience, **be knowledgeable of air quality control and regulation, and shall be fairly representative of conservation, public health, business, and agriculture.**

If you lived in where they Dominion is asking for permission to build this compressor station wouldn't you want the proper analysis done before any permits are approved. If these were your questions and concerns wouldn't you want them to be answered.

You are holding peoples health and their very lives in your hands. This is a very heavy burden. Please use your moral compass and your humanity as part of your decision making process.

Richard D. Langford, *Chair*

Samuel A. Bleicher

William H. Ferguson

Roy A. Hoagland

Ignacia S. Moreno

Nicole M. Rovner

Rebecca R. Rubin

Respectfully,

Marilyn Karp
2524 Little River Road
Haymarket, VA 20169
703 244-1903
marilynkarp@gmail.com

Marilyn Karp | 703 244-1903 | gchat/twitter marilynkarp



Air Division 1, rr <airdivision1@deq.virginia.gov>

Buckingham Air Permit application

1 message

Suzanne Keller <sjkeller.ma@gmail.com>

Fri, Sep 21, 2018 at 1:28 PM

To: airdivision1@deq.virginia.gov

Dear APCB,

I am submitting comments on the proposed Buckingham Compressor Station.

best regards,

Suzanne J. Keller
3014 Landria Drive
Richmond, VA 23225
804-266-4313



A_SJK_comment_APCB_Virginia Department of Environmental Quality.pdf

345K

Virginia Department of Environmental Quality
Piedmont Regional Office
4949-A Cox Rd
Glen Allen, VA 23060

September 20, 2018

Dear Members of the Air Pollution Control Board,

I write to submit public comment on the proposed air permit for the Buckingham compressor station of the Atlantic Coast Pipeline. I have recently retired from the Virginia Department of Health where I worked for nearly 30 years as an epidemiologist. I ask that you deny the permit for the reasons outlined below. As you consider this permit, I pray that you take seriously the section of the Virginia code that spells out the duties of the Board.¹ In particular, you must consider the health and safety of the 99 households within a mile of the proposed compressor station. Your fellow Virginians are counting on you to protect the health and safety of the Union Hill community as well as all Virginians who want clean air and a clean energy future.

I have had extensive discussions with DEQ staff, I attended the public information session in Buckingham County and I have spent quite a bit of time reviewing the air permit and air modeling report. There are significant problems with the air permit that I have identified and will describe in detail below.

I. Process

A. The DEQ and Dominion Energy spent nearly 3 years in conversation refining and improving the draft permit. The permit was released online to the public on August 8th with a 30 day comment period ending September 11, 2018, now extended to September 21, 2019. The citizens most impacted by the construction and operation of this facility have not been given adequate notice or time to review the permit and associated documents. Internet service in Buckingham County is not optimal and many people have no internet access. The documents were provided to the Buckingham County library, but did not arrive at the library until August 24th, originally giving residents only 18 days to review and comment on the permit. While I appreciate the extension of the comment period, it still does not address the

¹ Code of Virginia § 10.1-1307, Section E. Among other things the Board is to address the following: 1. The character and degree of injury to, or interference with, safety, health, or the reasonable use of property which is caused or threatened to be caused; 2. The social and economic value of the activity involved; 3. The suitability of the activity to the area where it is located; and 4. The scientific and economic practicality of reducing or eliminating the discharge resulting from such activity.

larger question of timing and access. **I respectfully request that the comment period be extended 30 days from 9/21/2018.**

B. The DEQ, plans to control the type and amount of information provided to you, our citizen air board.

From Patrick Corbett's Briefing :

"Steps before Board Consideration

- Public Comment Period - Comments received between August 8th and September 11th including comments at the public hearing
- DEQ reviews, considers, and responds to all public comments
- DEQ makes any necessary changes to permit documents
- DEQ proposes final draft"

I am concerned that this process will exclude the comments by residents most impacted by the compressor station and that it will exclude all public health impacts that I intend to present to you. It allows DEQ to decide what information you will receive and removes from the Board the ability to make an informed decision about the permit.

B. The DEQ did not conduct an environmental justice review of the proposed compressor station as required by federal law as DEQ receives federal funds for its operations. As a result, the people of Union Hill, most of whom are minorities were erased from consideration by the Commonwealth of Virginia. The Governor's Advisory Council on Environmental Justice charges that the location of the compressor station is environmental racism. The Blue Ridge Environmental Defense League (BREDL), filed a Title VI civil rights complaint with the EPA.

C. The DEQ insists that only technical comments about the air permit will be reviewed and provided to the Board. This narrow interpretation of the DEQ's and the Board's duty to protect air quality limits consideration of the social, economic, health, safety, scientific and location elements of § 10.1-1307, Section E. Indeed the idea that citizens should be limited to technical comments, especially those most impacted is unfair to the residents of Union Hill and to all citizens of Virginia who care about clean air.

Per § 10.1-1307, the AIR Board should consider the "suitability of the activity to the area where it is located." In conversations with DEQ staff and in Pat Corbett's presentation I learned that DEQ defers to the locality on siting issues and that siting would not be considered by the AIR Board in its review of the permit.

I am very concerned about the state ceding its authority to determine air quality to a local Board of Supervisors that has limited knowledge and no expertise in this area. The special use permit (SUP) is currently being challenged in the Supreme Court of Virginia as to its legality and may be vacated by the Court. Even if the SUP permit

stands, the AIR Board now knows that there are 99 households within a mile of the proposed facility and it should protect the health and safety of the community.

AIR Modeling Report

- A. I found errors in the modeling report regarding the existing air pollution as reported in the National Emissions Inventory database. I did ask DEQ specifically if all of the inputs had been checked by DEQ staff, and I was assured this had been done. Finding errors like this raise questions about the validity of the modeling report and its conclusions. Specifically the NOx and CO tons were incorrect in Table 3-5.
- B. The air modeling does not consider intensity and duration of exposures to the human beings and animals who live near the compressor station. Despite the absence of this kind of data, the report claims that the health of the community will be protected. See p. 26 of the Air Modeling Report where this conclusion is reported: "This indicates that the proposed Project will not adversely affect human health." This conclusion is based on two things: the NAAQS for the region will not be exceeded and the concentration of hexane and formaldehyde will not be exceeded.

These standards are not sufficient to protect human health on the ground in Union Hill. Regional air quality standards do not tell us anything about the impact on individuals or their vulnerability to the proposed emissions. The claim that the project will not adversely affect human health is unsupported by any evidence.

The Union Hill neighborhood has already suffered health impacts from four years of impending threats from pipeline construction, construction of the compressor station, and construction of man camps. Stress, sleep deprivation, emotional distress and loss of quality of life are already found on the borders of the compressor station property and in the path of pipeline.

- C. Dominion continues to present the total Buckingham population and persons per square mile to argue that there will be little impacts from emissions as the population is lower than monitored sites (p. 15-16). This allows Dominion to once again erase the residents of the Union Hill/Woods Corner neighborhoods from consideration. By July 2018 Dominion knew that there were 99 households within a mile of the proposed compressor station. They should not continue to erase these citizens and they certainly cannot claim to protect their health with a model that erases them once again.
- D. The air modeling report argues that the background air pollution in the locations where there are air monitors have greater population and more air pollution, therefore the air model results will be conservative, that is they

will over estimate the air pollution impacts for the criteria pollutants. I am skeptical about this conclusion. The modeling report promotes the idea that Dominion is doing more than necessary or that it is surpassing the requirements to insure the wellbeing of the community. These claims are not science, they are a carefully orchestrated public relations campaign to justify emissions that actually can be avoided altogether by denying the permit.

- E. To illustrate the burden of pollution is actually higher than the burden in most of the monitored sites, see Table 1 below. I take the data from the air modeling report and calculate tons per capita to illustrate the disparity in Buckingham. As you can see, the only location where the per capita burden of these pollutants is great than Buckingham County is Hopewell, Virginia, arguably the most polluted locality in Virginia. Rural locations like Buckingham are not treated fairly in these models.

Table 1. Burden of Pollution in Buckingham County and Air Monitor Sites: Tons Per Capita*

| Monitor Station | County | Population | Nox | CO | PM2.5 | Pm10 | Total Tons | Tons/Per Capita |
|------------------|-------------------|------------|------|-------|-------|-------|------------|-----------------|
| (Project Site) | Buckingham | 17,048 | 636 | 5,412 | 440 | 1,835 | 8323 | 0.49 |
| Harrisonburg | Rockingham County | 79,744 | 3104 | 22841 | 2075 | 7863 | 35883 | 0.45 |
| Richmond | Richmond City | 223170 | 5497 | 26151 | 772 | 1848 | 34268 | 0.15 |
| Henrico County | Henrico County | 326501 | 6810 | 37888 | 1067 | 2710 | 48475 | 0.15 |
| Vinton | Roanoke County | 94031 | 2220 | 12781 | 538 | 1789 | 17328 | 0.18 |
| Hopewell | Hopewell City | 22735 | 9708 | 4421 | 541 | 976 | 15646 | 0.69 |
| Albemarle County | Albemarle County | 106878 | 3265 | 17881 | 1012 | 4250 | 26408 | 0.25 |
| Lynchburg | Lynchburg City | 80212 | 1725 | 10153 | 576 | 1294 | 13748 | 0.17 |

*Data taken from the Dominion Air Modeling Report Table 3-4 Population Data for Background Monitors and Table 3-5 Emissions from Buckingham County and Surrounding Counties with Air Quality Monitors except for Buckingham Nox and CO values from NEI, 2014 accessed 9/9/2018.

Health Impacts

While there a growing body of literature, nearly 685 articles on the health impacts of unconventional natural gas infrastructure,² for compressor stations the health impacts come community based research, clinical observations and surveys of

² Hays J, Shonkoff SBC (2016) Toward an Understanding of the Environmental and Public Health Impacts of Unconventional Natural Gas Development: A Categorical Assessment of the Peer-Reviewed Scientific Literature, 2009-2015. PLoS One 11(4): e0154164, doi 10.1371/journal. Pone 0154164. Accessed 5/21/2018. This paper demonstrates that the weight of the findings in the scientific literature indicates hazard and elevated risks to human health as well as possible adverse health outcomes associated with unconventional natural gas development.

existing emissions. Nevertheless as we think about the health impacts it is clear that the permit as it stands is inadequate to be protective.

In a study of risks to humans from unconventional natural gas development, Brown and colleagues critique the assumption that regional ambient air standards compliance protects individual health.³ They pose the following questions that remain unanswered in the air permit, the air permit application and the air modeling report.

“What matters from a health perspective is the content and intensity of exposures at the individual level. The critical questions are: What is a person, in a given household, exposed to? How high do those exposures climb? How often is that resident exposed to these high levels? What happens physiologically when a particular toxic comes in contact with the body?”

The air permit does begin to answer or even assess these critical questions about exposures.

The permit purports to limit emissions for compliance with regional air quality standards, but it is silent on the *actual exposures* that people residing nearby will experience when peak emissions occur, such as start up and shutdowns, blowdowns and pigging events.

Minisink Compressor

In a project requested by the community the Environmental Health Project collected data on particulate matter and VOCs as well as health information.⁴ The Minisink compressor is a 12,000 hp station in New York.

The most frequently reported health impacts included respiratory, neurological and dermatological problems. In addition, overall mental health and wellbeing levels were below normal for half of the respondents.

The results of monitoring for PM2.5 outside the residents found elevated PM2.5 in baseline values for outside ambient air compared to the regional levels. In addition, episodic elevation of PM2.5 occurred, and though outside levels were below the EPA level of concern, one home had an average above the EPA standard.

³ David R. Brown, Celia Lewis & Beth I. Weinberger (2015) Human exposure to unconventional natural gas development: A public health demonstration of periodic high exposure to chemical mixtures in ambient air, *Journal of Environmental Science and Health, Part A*, 50:5, 460-472, p. 461 DOI: 10.1080/10934529.2015.992663

⁴ Southwest Environmental Health Project, Summary of Minisink Monitoring Results. <https://www.environmentalhealthproject.org/resources/17/click/5>; accessed 9/19/2018

Chemical samples were taken outside of four homes. "The levels of reported VOCs were not high in terms of health effects for a single chemical exposure, but are still of concern if these exposures occur over a long period of time of high spikes periodically occur" (p.3).

This case study demonstrates that unhealthy levels of PM2.5 may occur periodically and that exposures to VOCs and PM2.5 do occur among residents living within a few kilometers of the compressor station.

I spoke with investigators from ASTDR who provided information regarding two investigations that they conducted where high levels of PM2.5 were found.

Brooklyn Township Health Consultation:

In this report, ATSDR evaluated PM2.5 levels at a residence near a compressor station in NE PA. The monitored PM2.5 levels were found to be of concern for sensitive subpopulations. The PM2.5 levels measured at the residence were higher than the levels detected at the regional NAAQS monitor further away from the compressor station:

https://www.atsdr.cdc.gov/HAC/pha/BrooklynTownship/BrooklynTwnsp_pm2-5_HC_Final_04-22-2016_508.pdf

Brigich Compressor Station Exposure Investigation:

For this evaluation, ATSDR collaborated in an air sampling/monitoring effort with EPA measuring carbonyls, reduced sulfur compounds, hydrogen sulfide, PM2.5, and VOCs over ~2-3 months in 2012 near the Brigich Compressor Station in SW PA. As we mentioned, we found most of the air results would not be of public health concern, but we did highlight the PM2.5, hydrogen sulfide, and aldehydes as possibly of concern for sensitive populations:

https://www.atsdr.cdc.gov/HAC/pha/Brigich_Compressor_Station/Brigich_Compressor_Station_EI_HC_01-29-2016_508.pdf

Russo and Carpenter inventoried every pollutant from compressor stations in New York to provide a snapshot of the scope and volume of pollutants associated with compressor stations.⁵ In this comprehensive survey, the authors catalogue health impacts of chemicals and document the tons of pollutants released by compressor stations. They conclude, "The potential health impacts of the large volumes of pollutants generated by natural gas compressor stations have not been addressed, let alone answered, by those arguing for their construction and expansion."

⁵ Russo, PN, Carpenter, DO, Health Effects Associated with Stack Chemical Emissions from NYS Natural Gas Compressor Stations: 2008-2014. October 2017.

https://www.albany.edu/about/assets/Complete_report.pdf accessed 5/24/2018

Environmental Justice

The siting of an industrial facility that will emit toxic pollution 24/7 in the historic Freedman community of Union Hill is a glaring example of environmental racism. We must not repeat the mistakes of the past and continue a horrible legacy of placing the burden of these projects on the backs of minority communities. Justice demands that the air permit be denied for the peace and tranquility of this community will be damaged forever. The Code of Virginia, § 10.1-1307, Section E, should guide the Board's decision even if the air permit meets regional air quality standards.

The documents in support of this application, including the air modeling report, the application for the permit, and the engineering analysis continue to erase the residents of Union Hill from consideration. They all repeat the false narrative that this is a sparsely populated landscape. They all erase the people of Union Hill.

Conclusion

I do not believe that you (APCB) have sufficient information to assess whether this permit will protect the **health and safety** of the people who live in its shadow. Regional air quality standards will not protect vulnerable and sensitive populations who live in the proximity of the compressor station. Even if this is the "strictest permit ever" which is stated in the documents but not supported by any evidence, this compressor station is for a pipeline that is not needed and will not benefit our state. It will contribute tons of pollutants into our air, soil and water. You must protect the health and safety of the people of Union Hill, justice demands no less. I hope that you will deny the air permit for this compressor station.

Suzanne J. Keller (for myself)
3014 Landria Drive
Richmond, Virginia 23225
804.266.4313



Air Division 1, rr <airdivision1@deq.virginia.gov>

Buckingham County Compressor Station1 message

Bridget Kelley-Dearing <bridgetzlm@aol.com>

Thu, Sep 20, 2018 at 11:53 PM

To: airdivision1@deq.virginia.gov

Cc: michael.dowd@deq.virginia.gov, patrick.corbett@deq.virginia.gov

The air permit treatment of Particulate Matter impacts in particular, but also of health impacts from compressors in general, is inadequate

Particulate matter is known to impair lung function, aggravate asthma, cause high blood pressure and heart attack. Particulate matter can adhere with other compounds and then can carry these compounds, which may be toxic, into the deep lung and this is a health concern near compressor stations where multiple toxins are emitted with particulate matter.

Why is DEQ not adequately considering particulate matter, which will also be produced during the construction period, as well as daily during operations of Buckingham Compressor Station?

Given that particulate matter causes respiratory damage and there are technologies available to scrub PM from air emissions, how can
Dominion claim best available technology if they are not scrubbing particulate matter?

Bridget Kelley-Dearing
626 Stonewall Street
Lexington, Virginia 24450

bridgetzlm@aol.com
(540) 460-0535



Air Division 1, rr <airdivision1@deq.virginia.gov>

Buckingham Compressor Station1 message

Bridget Kelley-Dearing <bridgetzlm@aol.com>

Fri, Sep 21, 2018 at 12:00 AM

To: airdivision1@deq.virginia.gov

1Sulphur Oxides and Hazardous Air Pollutants (HAPs) emissions seem to be higher in the 2018 permit application when compared to 2017 estimates. How can Dominion claim best available technology (BACT) if they have selected new equipment that allows increases in these dangerous emissions?

Bridget Kelley-Dearing
626 Stonewall Street
Lexington, VA 24450

bridgetzlm@aol.com
(540)463-5113



Air Division 1, rr <airdivision1@deq.virginia.gov>

Buckingham Compressor Station

1 message

Bridget Kelley-Dearing <bridgetzlm@aol.com>

To: airdivision1@deq.virginia.gov

Fri, Sep 21, 2018 at 12:00 AM

1Sulphur Oxides and Hazardous Air Pollutants (HAPs) emissions seem to be higher in the 2018 permit application when compared to 2017 estimates. How can Dominion claim best available technology (BACT) if they have selected new equipment that allows increases in these dangerous emissions?

Bridget Kelley-Dearing
626 Stonewall Street
Lexington, VA 24450

bridgetzlm@aol.com
(540)463-5113



Air Division 1, rr <airdivision1@deq.virginia.gov>

Buckingham Compressor Station

1 message

Bridget Kelley-Dearing <bridgetzlm@aol.com>

Fri, Sep 21, 2018 at 12:22 AM

To: airdivision1@deq.virginia.gov

1 Atlantic Coast Pipeline compressor stations do not follow industry standard for spacing: Since the recommended distance between compressor stations is usually less than 100 miles, why is the distance between the Atlantic Coast Pipeline compressors so great, particularly since it concentrates dangerous pollution in the Union Hill and Woods Corner neighborhoods?

Given that industry standard is to have compressor stations at shorter intervals, distributing risks and hazards more evenly over transmission distances. How does the Atlantic Coast Pipeline explain that they have only one compressor station per state, and therefore these are very large with a greater impact as needed to provide the pressure to cover 200+ miles between CS #1 and CS #2 and CS #2 and CS #3?

Given Dominion's past actions in other locations, we can anticipate that this compressor station will be expanded in the future. Unless the company can be prohibited from expanding in the future, why is this facility not considered a major source of pollution now so stronger standards are applied?

Bridget Kelley-Dearing
626 Stonewall Street
Lexington, Virginia 24450

bridgetzlm@aol.com
(540) 463-5113



Air Division 1, rr <airdivision1@deq.virginia.gov>

Buckingham Compressor Station

1 message

Bridget Kelley-Dearing <bridgetzlm@aol.com>

Fri, Sep 21, 2018 at 12:34 AM

To: airdivision1@deq.virginia.gov

Cc: michael.dowd@deq.virginia.gov, patrick.corbett@deq.virginia.gov

- DEQ did not apply the best available control technology requirement correctly because neither Atlantic Coast Pipeline nor the DEQ ensured that the nitrogen oxide emission limit set in the draft permit achieved the maximum reduction feasible. The currently proposed reduction in nitrogen oxide emissions is 58%, but more significant emissions reductions are achievable and cost effective.
- Limiting nitrogen oxide pollution is essential for human health. According to the EPA, breathing air with a high concentration of nitrogen oxides can cause irritation in the human respiratory system. Nitrogen dioxide—along with other nitrogen oxides—react with chemicals in the air to form particulate matter and ozone. Both of these are also harmful to the human respiratory system.
- Longer-term exposures to elevated concentrations of nitrogen oxides may contribute to the development of asthma and can increase a person's susceptibility to respiratory infections. People with asthma, as well as children and the elderly, are generally at greater risk for these health effects.
- DEQ should require the Atlantic Coast Pipeline to continuously monitor nitrogen oxide emissions from the compressor turbines. This is necessary to ensure the Atlantic Coast Pipeline is complying with the nitrogen oxide emissions limits at all operating periods. The currently proposed stack testing is not sufficient to ensure compliance with the draft permit conditions.
- DEQ did not ensure compliance with 9VAC 5-80-1180 because it relied on flawed ambient air quality modeling. The flaws in the modeling include a failure to use the highest allowable emissions rates, failure to account for emissions in very cold conditions when nitrogen oxide rates are expected to increase significantly, and understating emissions during startup and shutdown. Therefore, DEQ did not ensure the compressor station could operate without preventing or interfering with the attainment or maintenance of any applicable ambient air quality standard and without causing or exacerbating a violation of any applicable ambient air quality standard.

- It is important for DEQ to set appropriate, enforceable one-hour limits in the permit. Short-term exposure to high concentrations of nitrogen oxides are especially harmful to people with chronic respiratory conditions. Such exposures over short periods tend to aggravate respiratory diseases, particularly asthma, leading to often severe respiratory symptoms.
- The Atlantic Coast Pipeline has not shown that the amount of toxic pollution emissions from the compressor will not cause or contribute to the endangerment of human health because the Atlantic Coast Pipeline's modeling for formaldehyde and hexane emissions is flawed. Therefore, DEQ cannot, based on the information ACP provided, ensure that the compressor station will not cause, or contribute to, the endangerment of human health. According to the EPA, "formaldehyde can cause irritation of the skin, eyes, nose, and throat. High levels of exposure may cause some types of cancers."
- DEQ should impose an ammonia limit in the permit for the compressor turbines. Currently, no such limit exists.

Bridget Kelley-Dearing
626 Stonewall Street
Lexington, Virginia 24450

-
- bridgetzlm@aol.com
- (540) 463-5113



Air Division 1, rr <airdivision1@deq.virginia.gov>

Request to extend public comment period on ACP's Buckingham County proposed compressor station

1 message

Deborah Kushner <drkinva@yahoo.com>

Sat, Sep 8, 2018 at 7:01 PM

To: "DAVID.PAYLOR@DEQ.VIRGINIA.GOV" <DAVID.PAYLOR@deq.virginia.gov>, "Michael.Dowd@deq.virginia.gov" <Michael.Dowd@deq.virginia.gov>, "Tamera.Thompson@deq.virginia.gov" <Tamera.Thompson@deq.virginia.gov>, "airdivision1@deq.virginia.gov" <airdivision1@deq.virginia.gov>

TO: David Paylor, DEQ Director
Michael Dowd, DEQ Director of Air Division
Tamera Thompson, Manager, Office of Air Permitting

I write the DEQ to ask for an extension of the public comment period for the proposed Atlantic Coast Pipeline compressor station in Buckingham County. Given the immense impact this project would have on the area, in addition to the immense quantity of technical information that was only recently received by the public to review, an extension is necessary.

The public was only given details of the compressor station's impact on air quality a few weeks ago. Where much of the county, particularly in the area around the proposed station is rural, low income and without broadband internet, and where there is a significant elder population, more time is needed, since much information is only available online. The one and only information session was held on August 16, where much was learned. Many, many more questions and concerns need to be addressed.

This neighborhood is being asked to bear a huge burden of air and noise pollution if this compressor station is built. They should be afforded more opportunity to learn about it, the consequences it will have on them and have input into safeguards this station should have as well as monitoring of pollutants and noise.

Sincerely,
Deborah Kushner
Nelson County, VA



Air Division 1, rr <airdivision1@deq.virginia.gov>

Air Pollution

1 message

Ruby Laury <arlee7146@gmail.com>

Fri, Sep 21, 2018 at 4:25 PM

To: airdivision1@deq.virginia.gov

Oops, forgot to attach letter. So this will be a second email

John & Ruby Laury



Letters to the DEQ & Air Pollution Control Bd Sept 21 2018.docx
20K

September 21, 2018

Air Pollution Control Board
Department of Environmental Quality
Division of Air and Renewable Energy

To whom it may concern:

RE: Atlantic Coast Pipeline, LLC and Buckingham Compressor Station (ACP 2) air permit

My name is Ruby Laury, I am originally from southern California. I moved here 15 years ago with my husband, John W. Laury. After moving here, I understood why he wanted to come back home to Buckingham. Buckingham is a beautiful place, and one of the most **quiet and peaceful**, no pollution—lots of clean air, and plenty of greenery...**Usually No stress, that is, until these past four and a half years.**

I have a great concern for our water. What is going to happen when the underground pipes leak? If this proposed compressor station and pipelines go through, we won't be able to drink the water. **Are they going to supply us with drinking water?** We won't be able to go outside because of the air and noise pollution.

What about our gardens? What about our livestock, domestic animals, and wildlife? They and we all need fresh, clean air. What about our water—water, a most precious commodity?

What about our senior citizens, some who are having health issues, what will happen to them? What about the younger generation whose parents/grandparents plan to leave them an inheritance of their property/homes, etc.? This legacy will be gone. Property values will go down—**will we still be paying the same taxes?**

We live in an agricultural area where we raise crops, cattle, dairy cows, donkeys, goats, and chickens; that is until Dominion/ACP convinced the Board of Supervisors that they wanted a special permit to change the zoning—is this legal? This is still an agricultural area—Not for Dominion—who has said we will be able to receive this natural gas—not true—this gas will have to be fracked, which will emit unsafe gases, and poisons, **polluting this most precious air that we breathe. Dominion has not been telling the truth.**

As a resident of Buckingham, Virginia, I am opposed to the proposed Atlantic coast Pipeline & compressor station because of its potential impacts on my community and to our democracy as a whole. I want you to know that many Buckingham landowners are being treated as criminals **on their own property** and are now being threatened in court. A declaration of eminent domain looms on the horizon, the most un-American of practices. Did you know that it was Samuel Adams, who said:

Among the natural rights of the colonists are these: first a right to life, secondly to liberty, and thirdly to property; together with the right to defend them in the best manner they can.

Our agricultural lands will be destroyed in the path of these monsters; and this beautiful scenery that attracts many of my relatives and friends from California to Buckingham is in jeopardy. They come here to relax and get away from the smog in Southern California.

The proposed ACP and Compressor Station just want to come in here and condemn this community, as if we don't exist.

Sometimes the Lord allows things to happen to get me out of my comfort zone—because if this had not happened, I would not have met so many wonderful, beautiful, and caring people from all over the United States.

I don't know if you have seen any of the videos as to what happens when these compressor stations have a blow-down: You'll see children and adults with serious nose bleeds, severe headaches, respiratory problems, polluted water, the extremely loud noise, etc. Fracking emits poisonous gases. If you or your staff would view these videos, you could see first-hand the problems with these proposed pipelines, and compressor stations.

I have a great concern for our water. What is going to happen when the underground pipes leak? If this proposed compressor station and pipelines go through, we won't be able to drink the water. Are they going to supply us with drinking water? We cannot live without water. I am concerned that the ACP will damage our water, that it will leave silt in the water, disrupt underground water systems and leave unprotected soil to just wash away.

What about our heritage, the African-American slave graves, the churches where we worship. The Union Hill Baptist Church was built in the 1800's. I live in Union Hill; our churches are in the Union Hill area. What will happen to them?

As I said, I am retired and spend most of my time in this community; breathing the clean air that is here and using water from our private well. My friends, children, and grandchildren like to visit here – where the Union Hill ancestors owned the land. I did not ask for the ACP to come through our community. I cannot see any way that we will benefit from it. I also am not convinced that either Dominion, the ACP, or the government will protect us and our environment.

What about the effect of noise, the Performance, stress, and behavior of animals. So, my concerns are the effect this noise will have on our cattle (especially the newborn calves) and our donkey. It has been proven that cattle/animals hear high-frequency sounds much better than humans. Can you image the stress, this will have on our cattle on a continual basis? Can you image the trauma this noise will have when the mother cow is trying to give birth? This is why I am so adamant about this proposed pipeline and compressor station. It only is not fair to the animals, but it is also not fair to us humans?

Finally, many studies have shown that hazardous and solid waste facilities, power stations, and industrial plants like the proposed compressor station and ACP are excessively cited in communities of color and low-income neighborhoods. And most importantly, these plants that **emit toxic air and noise pollution** will definitely have a negative effect on the health and well-being of us living in the Union Hill/Woods Road areas.

A review of environmental justice and equity law by the American Bar Association and the Hastings College of Law revealed that poor communities of color **breath some of the least healthy air in the nation**. This study was taken from the South Coast Air Basin in Southern California, where Latinos, African Americans, and the Asian populations in the region face a 50% higher cancer risk than Anglo-Americans in other regions.

Even the United States General Accounting office released finds that three-quarters of the hazardous waste landfill sites in eight southeastern states are located in primarily poor, African-American and/or Latino communities.

The United Church of Christ's Commission for Racial Justice published "Toxic Wastes and Race in the United States" **determined that race** was the most important factor in determining where toxic facilities were located.

We, John and I, want to live out our golden years here in this beautiful serene area; where we can sit outside and breathe in the clean air, and be able to look up in the dark sky at night and see the many beautiful stars that the Lord has put up into the heavens. God put us here to be good stewards of this beautiful land. We are to take care of it—not pollute it!

I will leave you with a quote from Dr. Martin Luther King, Jr.:

*Never, never be afraid to do what's right,
especially if the well-being of a person or
animal is at stake. Society's punishments
are small compared to the wounds we inflict
on our soul when we look the other way.*

And at our sister church, Union Grove Missionary Baptist Church, there's a banner behind the pulpit that reads:

Stand up for what is right even if you are standing alone...

Thank you for taking time out of your busy schedule to read our letter.

Respectfully,

John and Ruby Laury
2037 Union Hill Road
Buckingham VA 23921
Home Phone: 434.390.4725
John's Cell Phone: 434.390.7650
Ruby's Cell Phone: 434.390.4824